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# THE LANCET

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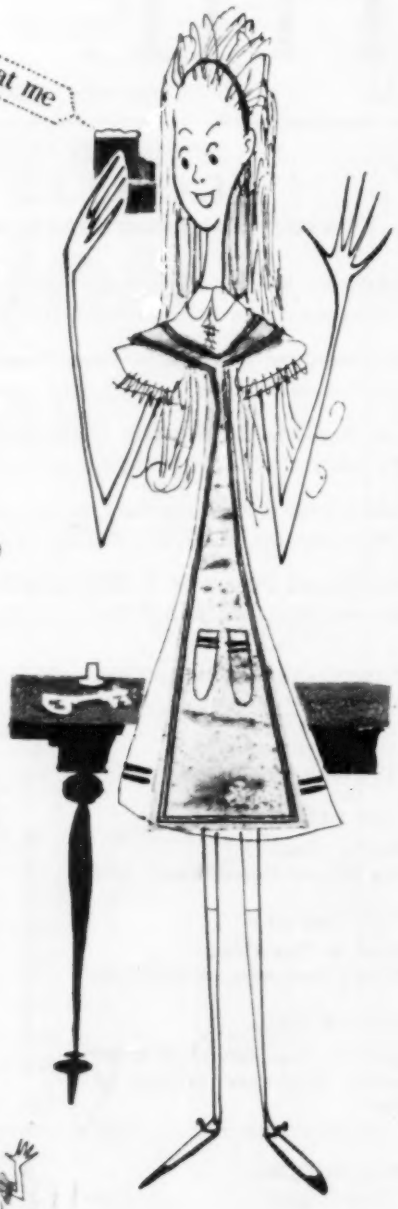
[1] *J. nerv. ment. Dis.* (1952) **116**, 346 [2] *Lancet* (1956) **1**, 794
[3] *Canad. med. Ass. J.* (1955) **73**, 701

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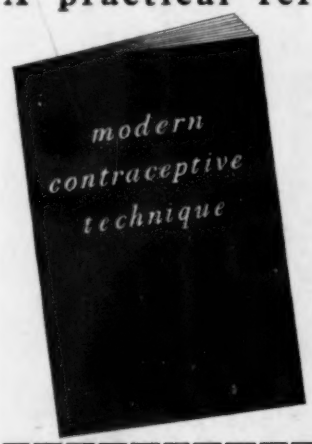


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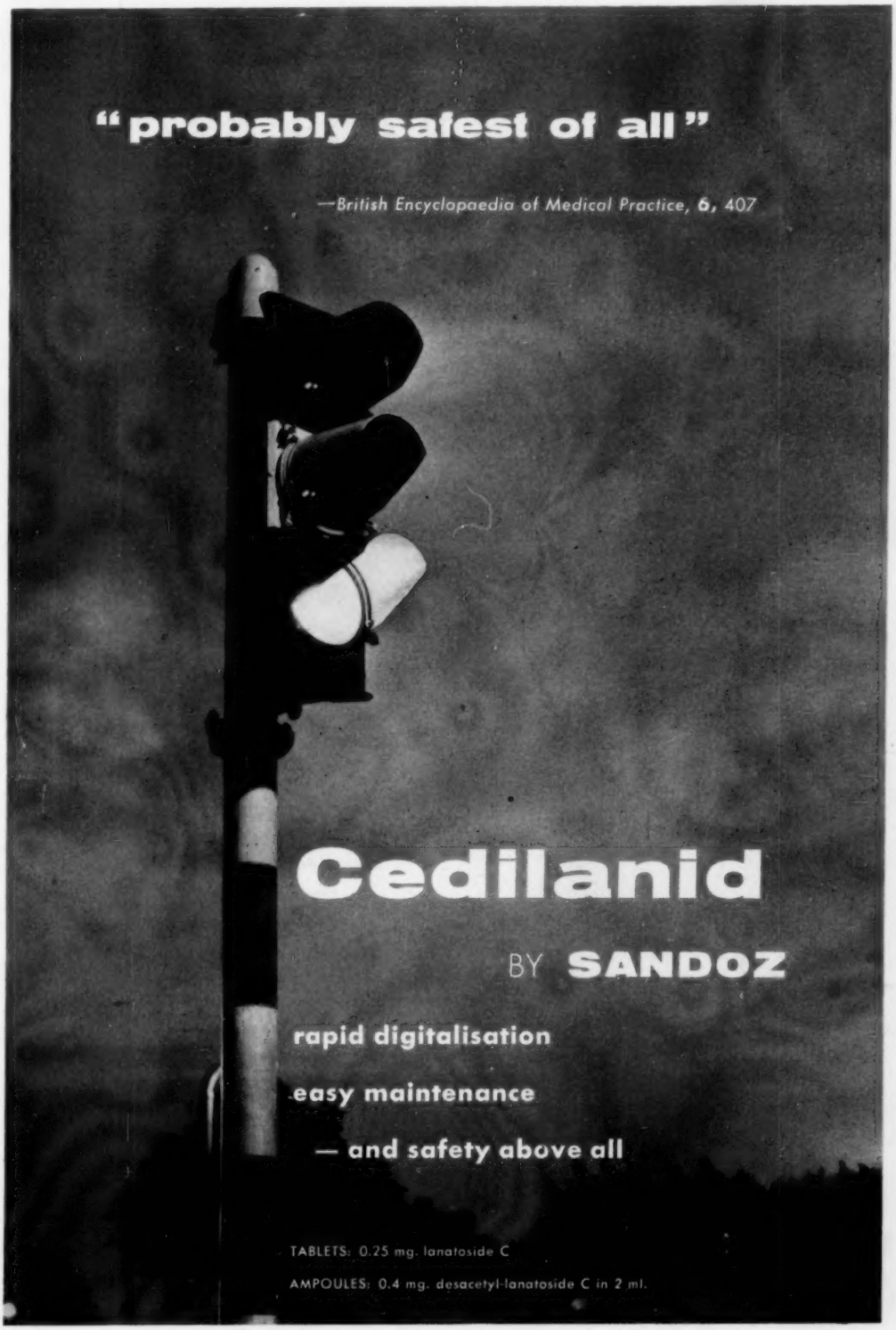
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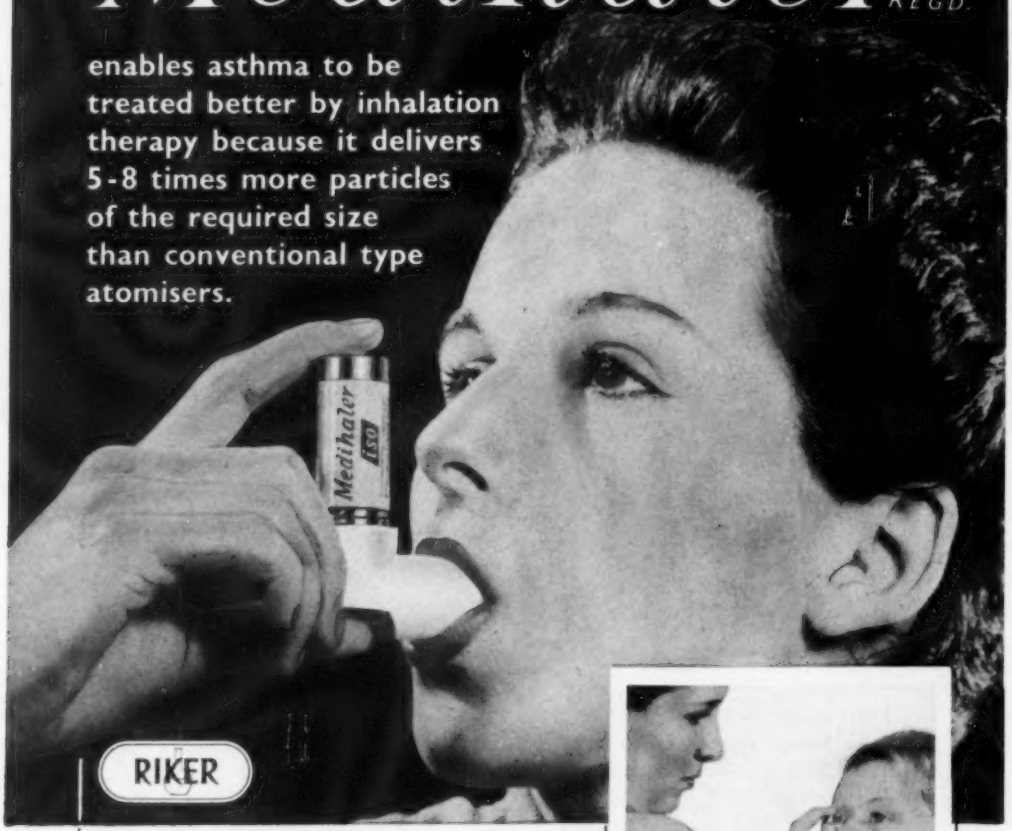

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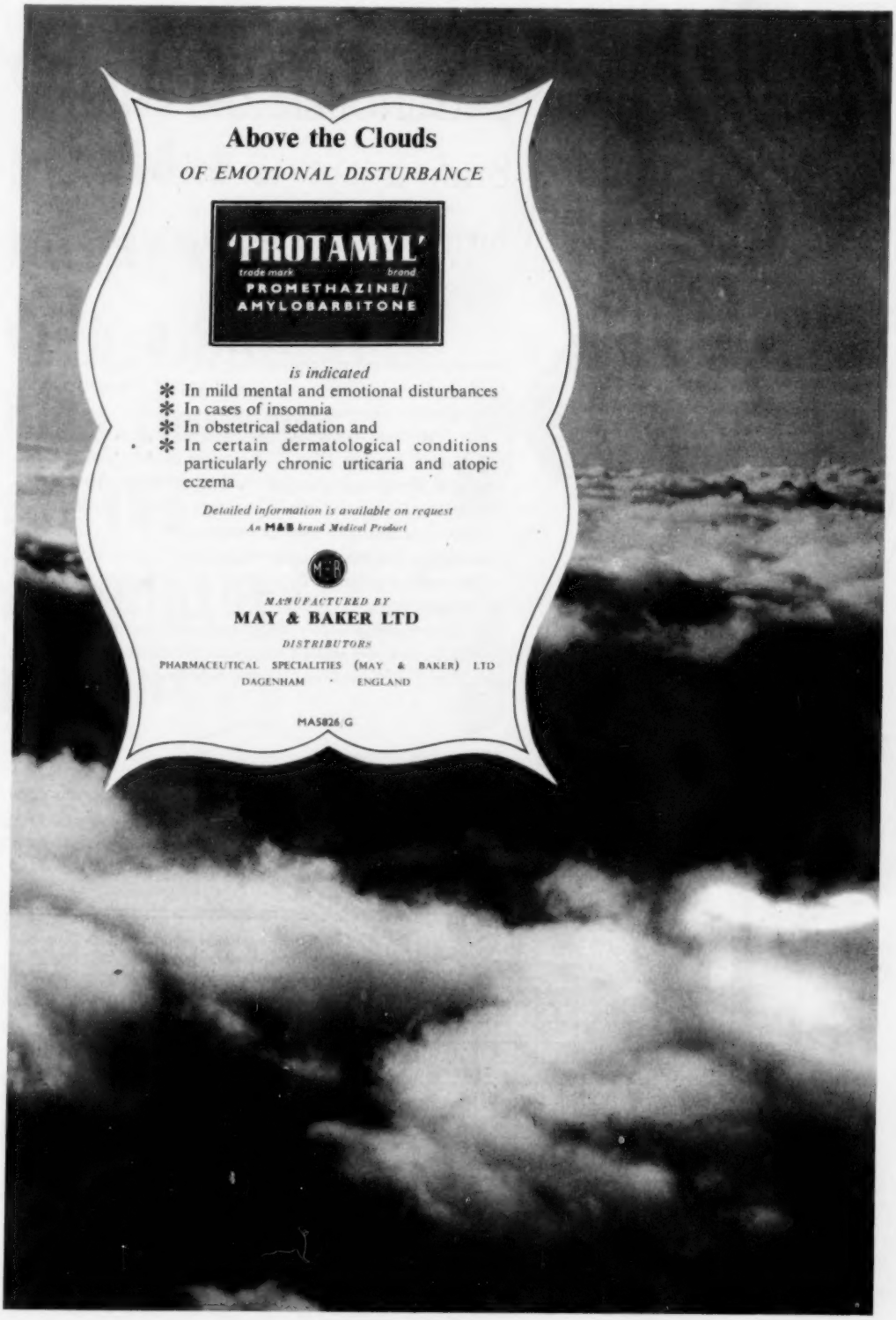
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Ambulatory Continuous Drip Method in the Treatment of Peptic Ulcer. *Amer. J. Dig. Dis.*, March 1955, **22:** 67-71

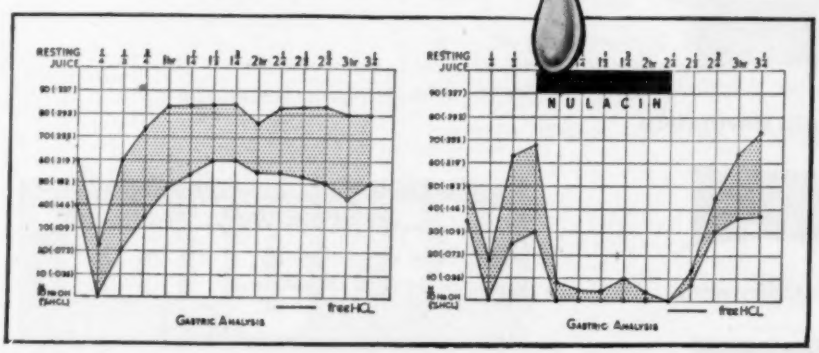
Management of Peptic Ulceration in General Practice. *Med. World*, December 1954, **81:** 591-601

Clinical Investigation into the Action of Antacids. *The Practitioner*, July 1954, **173:** 46

Further Studies on the Reduction of Gastric Acidity. *Brit. Med. J.*, 23rd January 1954, **1:** 183-184

Control of Gastric Acidity by a New Way of Antacid Administration. *J. Lab. & Clin. Med.*, 1953, **42:** 955

The Effect on Gastric Acidity of "Nulacin" Tablets. *Med. J. Aust.*, 28th November 1953, **2:** 823-824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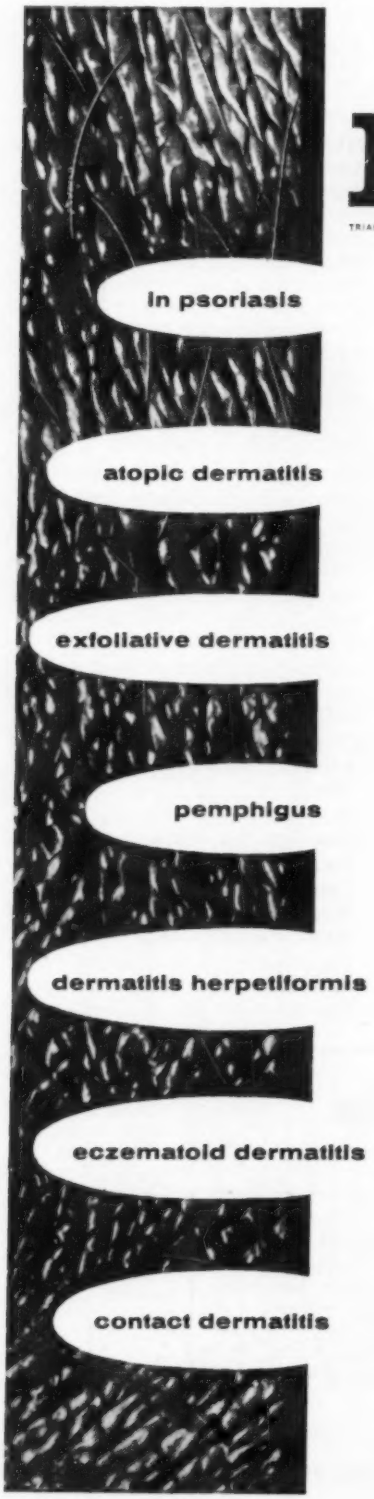


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[1] *J.A.M.A. 165:* 14: 1821-1823 (Dec. 7) 1957.
[2] *J.A.M.A. 167:* 8: 959-964 (June 21) 1958.

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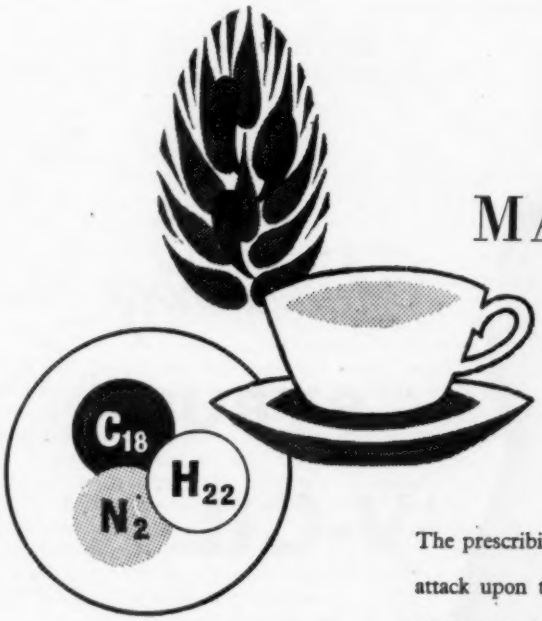


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# MEGALOBLASTIC ANÆMIA OF PREGNANCY AND THE PUERPERIUM *

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THE high incidence of anæmia in women attending the antenatal clinics of the City General Hospital, Stoke-on-Trent, and the allied Limes Maternity Hospital was recognised for many years, and a relatively high proportion of patients who failed to respond to iron therapy was found to have a megaloblastic marrow. As the number of such cases greatly exceeded hitherto published figures, it was decided at the beginning of 1957 to start an investigation of pregnancy anæmia with the following objects in view: (1) to ascertain the incidence of megaloblastic anæmia of pregnancy and the puerperium; (2) to find a reliable routine for the diagnosis of such cases; and (3) to conduct the inquiry on lines which might help to clarify the ætiology of the disease. An account follows of the first fifteen months of the investigation.

## Method

Since more than 65% of women attending the antenatal clinics of both hospitals had hæmoglobin values below 80% (100% = 14·8 g. per 100 ml.) it was impracticable to investigate all cases of pregnancy anæmia. Although previous workers (Clark 1952, Forshaw et al. 1957) have found megaloblastic marrows in women with hæmoglobins as high as 70%, in the present series an arbitrary hæmoglobin level of 65% (9·5 g. per 100 ml.) was chosen at and below which patients were included in the investigation; it was felt that cases thus selected would comprise the vast majority of megaloblastic pregnancy anæmias.

All patients with a hæmoglobin of 65% or less were followed up from the 24th week of pregnancy. Whenever the clinical condition permitted, oral, or more rarely parenteral, iron was given for three to six weeks and the hæmoglobin and blood-count were checked at regular intervals. If after the 32nd week the hæmoglobin was still below 65% a sternal puncture was performed, a blood specimen taken for serum-iron estimation, and a questionnaire completed concerning the patient's medical and obstetric history, her occupation, her domicile and her diet throughout pregnancy. About a third of all patients delivered in the two hospitals, however, did not attend the antenatal clinic until the 38th week or later and many were emergency admissions. In such cases, of course, lengthy follow-up during the antenatal period was impossible. Therefore, in all patients who were first seen with a hæmoglobin of 65% or less during the thirty-sixth week or later, and in all puerperal patients where anæmia could not be explained by hæmorrhage alone, marrow puncture was performed immediately, blood taken for serum-iron, and the usual questionnaire completed. In view of the shortage of obstetric beds, an increasing proportion of antenatal cases were examined as outpatients and, latterly, a few patients referred directly by general practitioners were likewise investigated.

If sternal puncture revealed a megaloblastic marrow, treatment with folic acid in doses of 30 mg. a day by mouth was initiated at once. 4 patients also received vitamin $B_{12}$, and 3 were given additional folic acid parenterally. 17 patients received blood-transfusions; in 4 of these the hæmoglobin was below 20%, and in the remainder hæmorrhage or early onset of labour necessitated transfusion. A second blood specimen for serum-iron was taken forty-eight to seventy-two hours after folic-acid therapy was begun. Whenever possible a histamine test-meal was performed and both hæmoglobin estimations and reticulocyte-counts were carried out at forty-eight-hour intervals for as long as the patient remained in hospital. During the last seven months the fæcal fat content and fat excretion were determined wherever circumstances permitted. More than half the patients were followed up as outpatients for up to six months after delivery.

## Incidence

Between March 1, 1957, and May 31, 1958, altogether 3199 women were delivered in the two hospitals. During this period 474 patients came under special review, of whom 347 were " late bookings ", emergency admissions, or patients in the puerperium who had not necessarily been anæmic in pregnancy. (Table I.)

TABLE I—INCIDENCE OF ANÆMIA IN PREGNANCY AND PUERPERIUM, MARCH, 1957, TO MAY, 1958

| Group of Cases | No. |
|---|---|
| Total delivered | 3199 |
| Examined by sternal puncture | 474 |
| With megaloblastic marrows: | 90 |
| Diagnosed during pregnancy | 62 |
| Diagnosed during puerperium | 28 |
| With normoblastic marrows | 372 |
| With doubtful diagnosis | 12 |

In all 474 cases marrow biopsies were taken, and in 6 the sternal puncture was repeated later. In 90 the marrow was found to be megaloblastic, in 372 it was normoblastic; and in a further 12 cases megaloblastic anæmia was suspected but a firm diagnosis could not be established. 7 patients with megaloblastic anæmia had been delivered at home and were subsequently admitted with puerperal anæmia—1 with Hb 12%, 2 with Hb 16%; a 4th was admitted with Hb 22% as late as six weeks after delivery. The remaining 83 patients were delivered in hospital. The incidence of megaloblastic anæmia of pregnancy in the present series was, therefore, 1 in 39 hospital confinements, or 2·8%.

Until about five years ago megaloblastic anæmia of pregnancy was thought to be relatively uncommon. Davidson et al. (1948) recorded 31 cases in seven years, Thompson and Ungley (1951) 46 cases in seventeen years, and Clark (1952) 18 cases in eight years. However, more recent reports (Israëls and Da Cunha 1952, Lowenstein et al. 1955, Gatenby 1956, Cowan 1957, Scott 1957, Forshaw et al. 1957) suggested a much higher incidence. The incidence of the disease, as estimated by various workers, is shown in table II.

Although the incidence in the present series is unexpectedly high, by no means all the cases of megaloblastic anæmia in this area are included. The two hospitals concerned contain only two-thirds of all the obstetric beds

TABLE II—THE INCIDENCE OF MEGALOBLASTIC ANÆMIA

| Author | Year | No. of cases | Incidence |
|---|---|---|---|
| Davidson et al. | 1942 | 16 in 8000 confinements | 1 in 500 |
| Clark | 1952 | 18 in 31,755 admissions | 1 in 1708 |
| Lowenstein et al. | 1955 | 18 in 10,623 confinements | 1 in 590 |
| Cowan | 1957 | 9 in 1850 confinements | 1 in 206 |
| Forshaw et al. | 1957 | 14 in 2700 confinements | 1 in 193 |
| Present series | 1958 | 83 in 3199 confinements | 1 in 39 |

* Some of the material of this article was presented to the Association of Clinical Pathologists in Dublin on April 17, 1958.

serving a population of approximately 450,000. According to A. J. McCall (personal communication), at least 10 cases were diagnosed during the same period in another hospital in this group where no special investigation was in progress.

### Laboratory Findings

*Appearance of Marrow*

The majority of cases presented with a normocytic orthochromic blood-picture; well-marked macrocytosis was seldom seen. In severe anæmias nucleated red blood-cells were sometimes found in the peripheral blood but typical megaloblasts were rare. Although buffy-coat films might have revealed megaloblasts in a certain number of cases, in our hands sternal puncture proved a much more rapid and certain method of diagnosis.

In about two-thirds of the cases in the present series the marrow-picture closely resembled that seen in pernicious anæmia, with large numbers of classical megaloblasts in all stages of maturity, but the degree of anæmia was not always reflected in the number of megaloblasts in the marrow. In approximately 30 cases the megaloblasts were of the transitional type (Israëls 1951). Some marrows, obtained from patients with mild or moderate anæmia, were predominantly normoblastic with only few megaloblasts, and in such cases interpretation of marrow-films was not always easy. Although Lowenstein and Bramlage (1957) have never found megaloblasts—even in small numbers—in the marrow of normal women during pregnancy, cases in the present series whose marrow presented any difficulty were diagnosed as megaloblastic anæmias only if the serum-iron was raised initially and if there was a good clinical and hæmatological response to folic acid. On such occasions the presence of giant metamyelocytes in the marrow-films was always a helpful sign, for these cells were usually numerous even when typical megaloblasts were scanty. In several instances there was well-marked myeloid hyperplasia; but a leukæmoid blood-picture (Sclare and Cragg 1958) was not encountered.

A normoblastic marrow was obtained between the 29th and 33rd weeks of pregnancy from 6 patients, who subsequently failed to respond to iron. In these cases sternal puncture was repeated some weeks later; and by that time in 3 of them a megaloblastic marrow had developed, thus illustrating that typical megaloblasts may not be apparent until very near term and that administration of iron before sternal puncture produces a much more clear-cut marrow-picture.

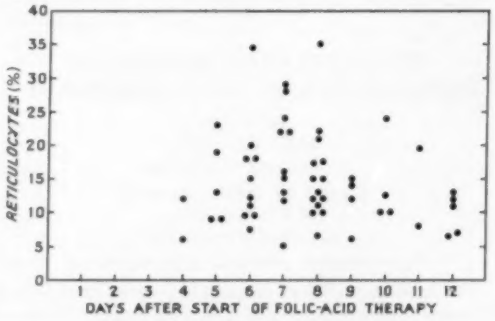


Fig. 2—Peak reticulocyte responses.

*Degree of Anæmia*

The lowest hæmoglobin in this series was 12%, the highest 65%. Fig. 1 contrasts the hæmoglobin levels in megaloblastic anæmias at the time of sternal puncture with those in normoblastic anæmias. The numbers in each column represent the percentage incidence in the two groups of cases.

Altogether 65 patients presented with hæmoglobins below 45%, and 35 of these had megaloblastic anæmia. In 7 out of 8 cases with a hæmoglobin of less than 30% sternal puncture yielded a megaloblastic marrow. Therefore, severe anæmia in late pregnancy or the puerperium is much more likely to be megaloblastic than due to iron deficiency. Severe puerperal anæmia is often attributed to blood-loss; but in this series 5 patients, whose hæmoglobin appeared to be unduly low even after allowing for a recent severe postpartum hæmorrhage, were found to have megaloblastic marrows.

*Reticulocyte Response*

Reticulocyte-counts were performed on all patients treated with folic acid, and it was possible to determine the peak reticulocyte response in 56 cases (fig. 2). The great majority responded with reticulocyte-counts of 10–20% within five to ten days of taking folic acid. In 12 patients, all with low initial hæmoglobins, the reticulocyte peak exceeded 20%, and in 11 cases it never rose above 10%. After blood-transfusion the reticulocyte response was usually delayed and often poor.

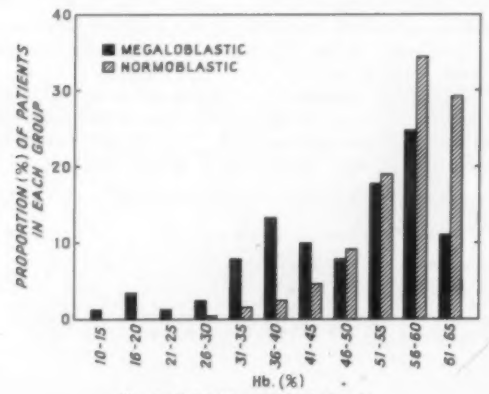


Fig. 1—Initial hæmoglobin levels.

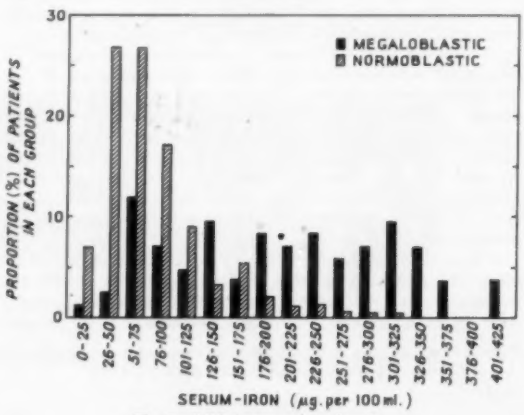


Fig. 3—Initial serum-iron levels.

*Serum-iron Estimations*

Fig. 3 compares the serum-iron levels in patients with normoblastic marrows with those in megaloblastic anæmia before folic-acid treatment was begun. The average normal serum-iron in women is given as 104 μg. per 100 ml. by Davies et al. (1952). According to Fay et al. (1949), the serum-iron level of pregnant women at term is nearer 60 μg. per 100 ml.

In this series nearly 90% of cases of normoblastic anæmia presented with low or normal serum-iron levels. The high values in the remainder could nearly always be explained by recent parenteral iron therapy. It is difficult to see why 'Imferon' produced a rise in the serum-iron in only some patients. In megaloblastic anæmia, however, the serum-iron was raised in 63·5% of cases. Since folic-acid and iron deficiency often occur together (Ennker 1954) it is not surprising that normal and, occasionally, low serum-iron values were encountered in this group.

A striking finding was the very high serum-iron found in some of the megaloblastic anæmias, greatly exceeding the values which are usually seen in pernicious anæmia. 18 patients had serum-iron levels above 300 μg. per 100 ml. and in only a few of these cases had intensive iron

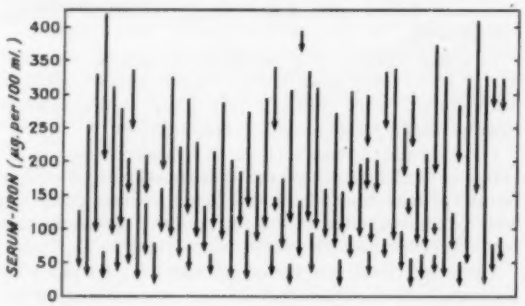


**Fig. 4—Decrease in serum-iron levels 48-72 hours after folic acid. Each arrow represents 1 patient.**

therapy been given. In 2 patients, who had taken no iron whatever throughout pregnancy, the serum-iron was 420 and 410 μg. per 100 ml.—figures approaching the iron-binding capacity of plasma. In 1 of these cases the estimation was repeated in another laboratory on a second blood specimen.

Fig. 4 depicts the fall of the serum-iron level in 80 cases of megaloblastic anæmia forty-eight to seventy-two hours after folic-acid therapy was begun. With a high initial serum-iron the fall was usually much more pronounced than where the original reading had been normal or low.

*Incidence of Achlorhydria*

Histamine test meals were carried out in 60 cases. Many patients objected to a tube test meal, and in 7 of these a 'Diagnex' dye test was performed instead. Out of a total of 67 cases thus examined 26 (37%) had achlorhydria. Davidson et al. (1942), Clark (1952), and Adno (1957) found a similar incidence, whereas somewhat lower figures are cited by many other workers (Thompson and Ungley 1951, Badenoch et al. 1955, Girdwood 1956, Forshaw et al. 1957, Scott 1957).

As it is well established (Murray et al. 1957) that pregnancy lowers gastric acidity, all patients with achlorhydria in this series are being followed up after confinement. Test meals have so far been repeated in 5 of

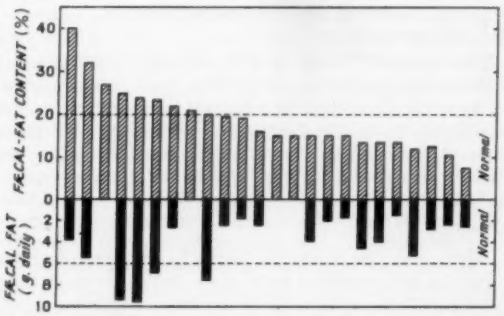


**Fig. 5—Fæcal fat on a normal diet. Each block represents 1 patient.**

these cases several months after delivery, and 2 showed free hydrochloric acid. Fortunately, the incidence of addisonian anæmia in pregnancy appears to be very low, for there is no record in the present series of a relapse following folic-acid therapy.

*Serum-bilirubin*

Serum-bilirubin estimations were not carried out as a routine and were found to be raised in only 3 instances. Clinical icterus was present in 2 patients, 1 of whom also had congenital hæmolytic anæmia. A similar case was recently reported by Drury and Geoghegan (1957).

*Fat Absorption*

The fæcal-fat content was estimated in 24 cases of megaloblastic anæmia. Since many patients were intolerant of a high-fat diet it was decided not to carry out full fat absorption tests. However, in 20 patients, who were receiving an ordinary full hospital diet, the total fæcal-fat content over a three-day period was determined. Frazer (1956) regards a daily fat excretion of 5 g. or more as suggestive of defective fat absorption. An excretion in excess of 6 g. per day was, therefore, considered definitely abnormal for the purpose of this study.

The results of these tests are shown in fig. 5. In 8 cases the fæcal-fat content exceeded 20%, but only 4 patients excreted more than 6 g. of fat per day; 2 of the latter volunteered the information that they did not tolerate fatty food even when not pregnant, and a 3rd patient had had a cholecystectomy in recent years. It can be inferred from these findings that folic-acid deficiency due to malabsorption is not a common cause of megaloblastic anæmia in pregnancy but that it may play a part in the ætiology of at least some cases.

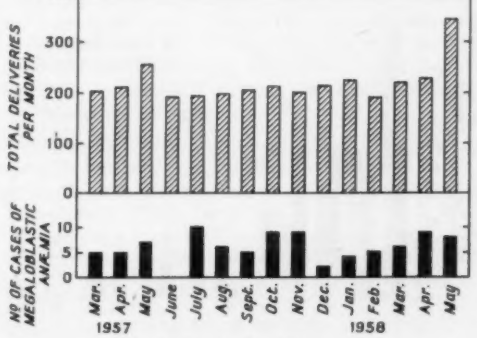


**Fig. 6—Seasonal incidence.**

### Clinical and Ætiological Factors

*Seasonal Distribution*

Both Gatenby (1956) and Thompson (1957) found a higher case incidence of megaloblastic pregnancy anæmia in the early months of the year and attribute this to lack of vitamins in the diet during the winter. Fig. 6 correlates the monthly case incidence of megaloblastic anæmia in the present series with the total number of confinements in each month and does not suggest a seasonal prevalence.

*Mortality*

There were no maternal deaths in the present series. 5 infants are known to have died, but in none of these could death be attributed to maternal anæmia. So far there have been 12 premature births.

*Age-distribution*

Fig. 7 shows the age-distribution of women with megaloblastic and normoblastic anæmia. It confirms the well-known prevalence of megaloblastic anæmia in the higher age-groups. On the other hand, over 30% of patients with megaloblastic anaemia were 25 years old or less and 7 were under 20. The mean age in the present series was 28·9 years, while the mean age given by most workers ranges from 30·8 to 33 years (Davidson et al. 1942, Thompson and Ungley 1951, Clark 1952, Forshaw et al. 1957).

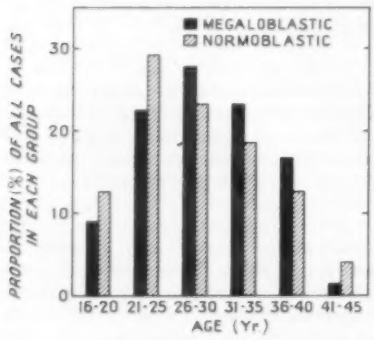


Fig. 7—Age incidence.

*Parity and Twin Deliveries*

80% of all cases of megaloblastic anæmia were in multiparæ, compared with only 64% of normoblastic anæmias. Fig. 8 illustrates the high incidence of the disease during the third and fourth pregnancies. This bears out the findings by previous workers (Adno 1957, Forshaw et al. 1957).

Of 90 women with megaloblastic anæmia 7 (7·8%) gave birth to twins, and among the 372 normoblastic anæmias there were 9 twin deliveries (2·4%). The higher incidence of the disease in multiple pregnancies has been stressed by Girdwood (1956), Scott (1957), and many others.

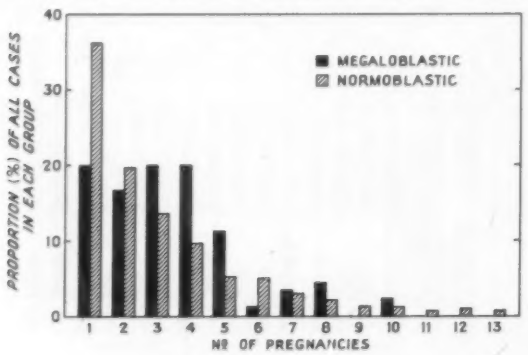


Fig. 8—Parity.

*Clinical Observations*

In 4 patients megaloblastic anæmia was diagnosed in two successive pregnancies, and in a 5th case the disease developed in three pregnancies within four years. A further patient with a previous history of megaloblastic anæmia presented with moderately severe normoblastic anæmia, but she had received folic acid throughout pregnancy. Forshaw et al. (1957) and several other workers have already remarked on the tendency of megaloblastic anæmia to recur in successive pregnancies.

Several cases in this series exhibited a sudden drop of 8–15% in the hæmoglobin level during the last 2 or 3 weeks of pregnancy, thus confirming previous findings by Callender (1944). More commonly, however, the onset of the disease was insidious and it was, therefore, difficult to determine with any accuracy the time when the anæmia first appeared. 5 cases were diagnosed between the twenty-ninth and thirty-second week of gestation, 26 cases from the 33rd to the 36th week, and 37 cases from the 37th to the 40th week; 6 women in the last group gave birth to premature infants and the disease was not recognised until after delivery. Altogether 28 cases were diagnosed during the puerperium, 20 within a week of confinement.

In many women with megaloblastic anæmia the skin had a deceptively good colour which belied their low hæmoglobin, while patients with pure iron-deficiency anæmia usually exhibited much greater pallor.

Glossitis and ulceration of the mouth were noted in 13 cases. 3 patients had petechial hæmorrhages, 2 with a normal platelet-count and 1 with severe thrombocytopenia which remitted after folic-acid therapy. Splenomegaly was observed on several occasions.

Gastrointestinal symptoms, described as frequent by Callender (1944), were only seldom encountered in the present series. 3 women gave a history of diarrhœa and 4 complained of nausea and vomiting. Some degree of anorexia, however, was present in 51% of cases.

*Response to Treatment*

All patients with megaloblastic marrows responded clinically to treatment with folic acid. Several women volunteered the information that they felt better even before the hæmoglobin had begun to rise.

The response to vitamin $B_{12}$ was poor, judging by the following cases:

**Case A.**—Early on in the investigation, a woman of 33, in the 29th week of her third pregnancy and with histamine-fast achlorhydria, was initially treated with massive doses of vitamin $B_{12}$ without folic acid. Ten days later her hæmoglobin had dropped from 30 to 20%, and her reticulocytes were only 2%. At this stage folic-acid therapy was begun; this led to a brisk reticulocyte response, and within three weeks her hæmoglobin had risen to 56%.

**Case B.**—In a 2nd case, diagnosed during the 30th week of pregnancy, the hæmoglobin rose from 39 to 69% in three weeks on folic acid alone. Owing to a misunderstanding, vitamin $B_{12}$ was substituted at that time, and her hæmoglobin fell to 58%. Folic-acid therapy was recommenced, and within four weeks her hæmoglobin was 84%.

2 further patients had been given daily injections of vitamin $B_{12}$ and intramuscular iron by their general practitioners. In 1 of these the hæmoglobin fell from 58 to 39% on that regime but rose to 53% after two weeks on folic acid. The other patient was admitted to hospital,

TABLE III—THE INCIDENCE OF COMPLICATIONS IN PATIENTS WITH MEGALOBLASTIC AND NORMOBLASTIC ANÆMIA

| Condition | Megaloblastic (%) | Normoblastic (%) |
|---|---|---|
| Pre-eclamptic toxæmia | 13·3 | 12·9 |
| Obstetric hæmorrhage | 6·7 | 6·2 |
| Sepsis and urinary infection | 3·3 | 1·3 |
| Rheumatic heart-disease | 2·2 | 1·9 |
| Thrombosis and thrombophlebitis | 1·1 | 0·6 |
| Chronic bronchitis and asthma | 1·1 | 1·3 |
| Chronic nephritis | 1·1 | 1·6 |
| Syphilis | 1·1 | 0·6 |
| Others | 3·3 | 4·0 |

almost moribund, with a hæmoglobin of 17% and 3% reticulocytes. She, too, responded promptly to folic acid, and four weeks later her hæmoglobin had reached 64%.

*Complications*

As table III shows, the only two common complications were pre-eclamptic toxæmia and obstetric hæmorrhage, but both conditions occurred almost as frequently in the 372 normoblastic anæmias. The incidence of sepsis and urinary infection was surprisingly low, since Callender (1944) found sepsis in 26 out of 41 cases. Scott (1957) likewise stresses a high incidence of infection, pre-eclampsia, and heart-disease in her series of 19 cases.

*Family History*

In none of the 90 cases of megaloblastic anæmia was there any family history of either addisonian or any other form of megaloblastic anæmia, but the sister of one woman suffered, as did the patient herself, from congenital hæmolytic anæmia.

*Diet*

A brief dietetic history was obtained from all the 474 patients with anæmia and from 100 women in late pregnancy who were not anæmic. Although this study did not include a detailed social survey it can reasonably be inferred that the majority belonged to the industrial working-class.

Fig. 9 shows that the proportion of all anæmic women who had an inadequate overall diet during pregnancy was substantially higher than in normal controls. This disparity is even greater between the normoblastic anæmias, in which 12% of patients took an inadequate diet, and the megaloblastic anæmias, in which the proportion was 42%.

Of all single items of food, meat exhibited the greatest variation between different groups. Only 35% of patients with megaloblastic anæmia ate three or more meat meals a week, compared with 80% of patients with normoblastic anæmia and 91% of healthy controls. Altogether 133

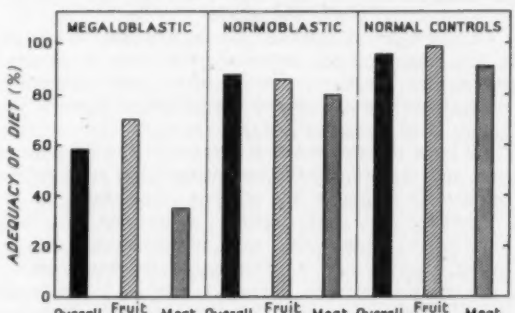


**Fig. 9—Dietetic analysis.**

women with anæmia, in this series, ate only two meat meals a week or less, and in 58 of these (44%) the anæmia was megaloblastic. The difference is much less striking when the intake of fresh fruit and vegetables is compared. A much larger proportion of expectant mothers appeared to eat fresh fruit, tomatoes, carrots, and green vegetables than ate an adequacy of fresh meat.

Few patients drank less than 5 pints of milk a week. Only about 65% of all women with anæmia, both normoblastic and megaloblastic, ate 3 or more eggs a week, compared with 78% of healthy controls. There appeared to be no correlation between megaloblastic anæmia and the brand of bread usually consumed, or whether it was white or brown bread.

57% of patients with megaloblastic anæmia and 49% with normoblastic anæmia had taken iron during pregnancy. The small difference between these two figures is surprising and emphasises once again that in many cases of megaloblastic anæmia there is also iron deficiency.

Another important point which emerges from fig. 9 is the high incidence of anorexia in patients with megaloblastic anæmia. It is certainly possible that lack of appetite was responsible for the poor diet in some cases, as suggested by Thompson and Ungley (1951) and Forshaw et al. (1957). In the present series, however, anorexia rarely preceded the onset of anæmia and most of the patients concerned had taken a poor diet throughout pregnancy.

Opinion is divided concerning the part played by nutritional factors in the causation of megaloblastic anæmia of pregnancy. Wills (1932) in her classical studies of pregnancy anæmia showed that poor diet was responsible for the type of the disease encountered in tropical countries—a view recently substantiated by Tasker et al. (1956). But several modern textbooks still deny that megaloblastic pregnancy anæmia, as seen in temperate climates, is affected by diet. In the opinion of Moore et al. (1955), an inadequate diet may result in iron deficiency but not megaloblastic anæmia of pregnancy. In recent years, however, several workers have found an association between protein-poor diet and pregnancy anæmia (Doyle and McGrath 1954) and more especially megaloblastic anæmia (Lowenstein et al. 1955, Gatenby 1956, Forshaw et al. 1957, Thompson 1957). The importance of meat in this connection is not altogether apparent, since folic acid is also contained in many vegetable foods.

*Occupation*

22% of women with megaloblastic anæmia had been working in shops and factories during pregnancy, compared with 36% of those with normoblastic anæmia. This difference is partly explained by the higher incidence of the former disease in multiparæ who are tied to their homes by small children. The difference might, however, be partly determined by difference in diet, since canteen meals do at least provide a modicum of meat and other protein foods to expectant mothers who might otherwise neglect themselves at home.

*Geographical Distribution*

Owing to the very high incidence of anæmia in this series the possibility of local factors in its causation was at first considered. The geographical distribution of cases was plotted on a map with a view to determining any possible effect of different water-supplies on the case incidence. This map revealed a random scatter of cases with a maximum incidence in the municipal housing-estates of both Stoke-on-Trent and Newcastle-under-Lyme.

## Discussion

As a result of the present study the incidence of megaloblastic anæmia of pregnancy in hospital patients can be estimated with reasonable accuracy. To many observers this incidence will appear astonishingly high, and the question arises whether a similarly high incidence pertains throughout the rest of the country. From the available findings it is unlikely that any special factor distinguishes North Staffordshire from other industrial areas in Great Britain. Between 1953 and 1956 only patients with severe anæmia or a suggestive blood-count were subjected to sternal puncture in the two hospitals concerned, and only 12–20 cases were diagnosed during each of these years. It is clear, therefore, that the majority of cases with only mild or moderate anæmia were missed. One can infer from this that similar intensive efforts at diagnosis in other areas would yield comparable figures.

In the eyes of many obstetricians, megaloblastic anæmia in 2·8% of all hospital confinements warrants routine administration of folic acid to all women during the last trimester of pregnancy. Lowenstein et al. (1955), after adopting this regime, have seen no more cases of the disease. Where facilities for full hæmatological examination are lacking, folic acid should be given in all cases of anæmia in late pregnancy which do not promptly respond to iron. Vitamin $B_{12}$ is unlikely to prevent the development of megaloblastic anæmia of pregnancy and is, therefore, not a substitute for folic acid in these cases. It is debatable whether small doses of vitamin $B_{12}$ should be administered in addition to folic acid to patients in the older age-groups, since folic acid alone is contraindicated in pernicious anæmia.

The blood-picture in megaloblastic pregnancy anæmia rarely provides a definite diagnosis. In the presence of severe anæmia, examination of buffy-coat films may reveal megaloblasts and thus obviate the need for sternal puncture, but in the majority of cases marrow puncture is necessary and can easily be performed on outpatients. Serum-iron estimations and reticulocyte-counts are helpful in confirming the diagnosis and assessing the response to treatment. Histamine test-meals are advisable, especially in women over 30, for the presence of free hydrochloric acid rules out pernicious anæmia and renders a long follow-up unnecessary.

Many different views have been expressed concerning the pathogenesis of the disease. Owing to the high incidence of cases associated with a poor diet in pregnancy it is tempting to regard megaloblastic anæmia as a mere deficiency disease which is precipitated by increased demands for folic acid by the rapidly growing fœtus. This is reflected in the high serum-folic-acid levels of newborn infants (Baker et al. 1958). The raised incidence of the disease in twin pregnancies also supports such a view. However, this cannot be the whole explanation, for severe megaloblastic anæmia occurs in patients who have eaten a perfectly good diet throughout pregnancy, and, conversely, women who live literally on bread and potatoes as their staple foods may retain normal hæmopoiesis.

Alternatively, the disease may be due to defective absorption of folic acid in pregnancy (Scott 1954). In view of the folic-acid deficiency in some cases of steatorrhœa, fat absorption in megaloblastic pregnancy anæmia has been studied by several workers. Davis and Brown (1953) found 3 cases with defective fat absorption, and in 4 cases here reported the fæcal-fat excretion was abnormally high; whereas Badenoch et al. (1955) and Moore et al. (1955) found no evidence of diminished fat absorption. According to Girdwood (1953), folic-acid absorption is normal, but Chanarin et al. (1958) observed low serum-folic-acid levels in pregnant women with and without megaloblastic anæmia; this, they suggest, is due to impairment of absorption of this vitamin even in normal, or apparently normal, pregnancy.

Some workers have explained the ætiology of the anæmia in terms of resistance to the action of folic acid and vitamin $B_{12}$ during pregnancy (Badenoch et al. 1955), or interference by unknown factors with folic-acid metabolism (Girdwood 1956). It is believed that these factors interfere with the utilisation of folic acid (Moore et al. 1955) and, presumably, its conversion to folinic acid. Scott (1957) has shown that very small doses of folinic acid are effective in establishing normoblastic erythropoiesis, and that some cases do not even require a maintenance dose.

Since it was demonstrated (Nichol and Welch 1950, Williams 1955) that ascorbic acid is necessary for the reduction of folic acid to folinic acid, many clinicians are now treating pregnancy anæmia with large doses of vitamin C. However, Vilter et al. (1950) and Mueller and Will (1955) have shown that the role of vitamin $B_{12}$, folic acid, and ascorbic acid in the maintenance of normal erythropoiesis and nucleic-acid metabolism generally is exceedingly complex. Until more is known about the exact interrelationship of all these factors the ætiology of megaloblastic anæmia in pregnancy is unlikely to be fully understood.

Badenoch et al. (1955) have postulated that infection and pre-eclamptic toxæmia predispose to megaloblastic anæmia by interfering with the absorption or utilisation of folic acid. In the present series, however, the incidence of sepsis and urinary infection was low, and anæmia usually preceded the signs of pre-eclampsia, which occurred just as frequently in normoblastic as in megaloblastic anæmias. This suggests that anæmia per se predisposes to pre-eclamptic toxæmia rather than that pre-eclamptic toxæmia interferes with normal erythropoiesis.

In the light of present knowledge it would be reasonable to regard megaloblastic anæmia of pregnancy as a group of related conditions and not as a disease entity (Lowenstein et al. 1955, Badenoch et al. 1955). In some cases poor diet, especially animal protein, certainly plays a major part in the ætiology of the disease; in others an underlying malabsorption of folic acid may become acute as a result of high fœtal demands; and in a further group inability to utilise folic acid may produce megaloblastic anæmia. One or all of these factors may operate in any particular case.

## Summary

During a period of fifteen months 474 cases of anæmia in late pregnancy and the puerperium were investigated by sternal puncture, blood-counts, and serum-iron estimations. In 90 cases a megaloblastic marrow was found, 28 of them in the puerperium.

All cases were treated with folic acid. The reticulocyte peak and the drop in the serum-iron level reflected the response to treatment in a majority of patients.

Anæmias with a hæmoglobin of less than 45% were more often megaloblastic than normoblastic. Achlorhydria occurred in 37% of cases, and fat absorption was impaired in 4 instances. No special seasonal incidence was noted. The mean age was 28·9 years, and 80% of patients were multiparæ.

Gastrointestinal symptoms were uncommon, and the incidence of complications was not substantially higher

than in the normoblastic anæmias. In 42% of women the diet was poor, compared with 12% of cases of normoblastic anæmia and 4% of healthy controls. The difference was even greater in a comparison of meat intake.

No local factors could be discovered to account for the high incidence in this series.

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# ENTEROVIRUSES AND DIARRHŒA IN YOUNG PERSONS

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SURVEYS of the distribution of enteroviruses in the stools of young persons by Ramos-Alvarez and Sabin (1956), Ramos-Alvarez (1957), Gelfand et al. (1957), and Melnick (1957) have revealed the presence of these agents in healthy normal children. The agents were also isolated in some instances from the stools of infants and children with diarrhœa, but the illness was commonly of the mild undifferentiated "summer diarrhœa" type. These findings have suggested the possibility of a causal relationship between certain enteroviruses, especially members of the enteric cytopathogenic human orphan (ECHO) virus group, and non-specific types of diarrhœa. The possibility of an association was strengthened recently by the isolation of ECHO virus type 18 from the stools of infants in two related outbreaks of diarrhœa by Eichenwald et al. (1958), who were able to prove the causal association between ECHO virus type 18 and the diarrhœa.

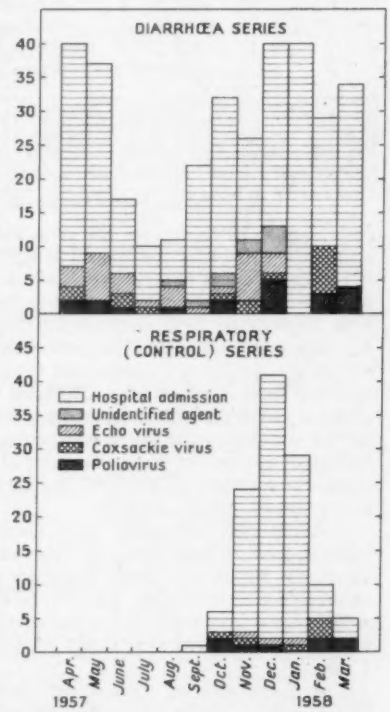
In an attempt to assess the distribution of enteroviruses in children with diarrhœa in the West of Scotland, an investigation was started in this laboratory in April, 1957, and we analyse here the results of the first year' ssurvey.

## Clinical Material

During this year from April, 1957, a single stool specimen was collected on admission from each of 338 children admitted with diarrhœa to Ruchill Hospital, Glasgow. The clinical diagnosis on admission was either "gastroenteritis" or "clinical dysentery". In age the children ranged from 1 week to 5 years, but of those with the clinical diagnosis of gastroenteritis the majority were less than 6 months old. Bacteriological examinations were performed as a routine on a separate aliquot of stool, also obtained on admission.

Serological studies were not attempted on this group of children, whose average stay in hospital was too short to allow collection of a "convalescent" serum specimen.

A control group of children, of similar age and social background, was obtained from the children admitted to Ruchill Hospital with respiratory infections during the same period. This group contained 115 children, and the disparity in numbers is largely accounted for by the absence of admissions to hospital for respiratory illness during the summer months.




**Number of children admitted to hospital with diarrhœa and respiratory illness showing distribution of viruses isolated from each group.**

## Technical Methods

Each stool specimen was prepared for examination by homogenisation to a 10% suspension in Hanks' solution with added antibiotics, and clarified by centrifugation. Each extract was inoculated in 1 ml. amounts into two replicate culture tubes of cynomolgous-monkey-kidney cells, prepared according to the method of Bodian (1956). Each tube already contained 1 ml. of medium. After a one-hour adsorption period at 37°C the inoculum was replaced by Earle's saline solution. For the identification of viruses the conventional

neutralisation test was performed, using monkey antiserum to the polioviruses, and rabbit antiserum to ECHO virus types 1–14, Coxsackie virus types B1–B5 and A9.

## Results

The distribution of cases in both the diarrhœa and the respiratory groups is shown on a monthly basis in the accompanying figure. Admissions to hospital on account of diarrhœa were fewest between June and September. The first admission for respiratory illness occurred in September.

From the 338 diarrhœal cases a total of 75 viruses was isolated, representing an isolation-rate of 22%; whereas 17 viruses were isolated from the 115 cases in the respiratory group—a rate of 14%. In the seven months during which respiratory control cases were being admitted, 46 viruses were isolated from 223 cases of diarrhœa. The percentage isolation-rate for the seven months is thus 21, compared with 14 for the control group.

TABLE I—ISOLATION-RATES AND DISTRIBUTION OF VIRUS TYPES ISOLATED FROM STOOLS OF DIARRHŒAL AND RESPIRATORY (CONTROL) CHILDREN DURING TWELVE MONTHS FROM APRIL, 1957, AND DURING SEVEN MONTHS FROM SEPTEMBER, 1957

| — | Diarrhœa | | Respiratory control (7 months) | Total series |
|---|---|---|---|---|
| | 12 months | 7 months | | |
| Total cases | 338 | 223 | 115 | 453 |
| Total isolations | 75 (22%) | 46 (21%) | 17 (14%) | 92 (20·3%) |
| ECHO virus | 29 (8·5%) | 12 (5·4%) | 3 (2·5%) | 32 (7%) |
| Poliovirus | 20 (5·9%) | 14 (6·3%) | 8 (7%) | 28 (6·2%) |
| Coxsackie virus | 16 (4·7%) | 11 (4·9%) | 6 (5%) | 22 (4·9%) |
| Other (unidentified agent) | 10* (2·9%) | 9 (4%) | .. | 10* (2·2%) |

* Includes 1 adenovirus type 2.

The distribution of virus types within both series as a whole and also the isolations during the seven months from September, 1957, are compared in table I. The percentage isolation-rates for poliovirus and Coxsackie viruses are similar in diarrhœa and control groups. The rate for ECHO viruses from diarrhœal children varied between rather more than three times and twice the rate for the controls, according to the period. Although this increased number of ECHO virus isolations indicates a trend, the numbers do not differ significantly from those in the control group; $P > 0.05$.

No significant differences were observed in the total isolation-rates of each group of viruses at three different age-levels within the whole diarrhœa series (table II), although a greater number of ECHO and Coxsackie viruses were isolated from the 1–2-year age-group. The majority of unidentified agents were found in children of less than 1 year.

The distribution of types within each virus group is shown in table III for both diarrhœa and control groups. The predominance of type 1 in the polioviruses reflects the predominant type causing paralytic illness during the summer of 1957 and spring of 1958 in the West of Scotland. An outbreak of infection caused by Coxsackie A9 in February, 1958, in the Glasgow area was reflected by an increase in the numbers of isolations in both groups. Type 7 was the most frequently encountered ECHO virus.

TABLE III—NUMBERS OF ISOLATIONS FROM DIARRHŒA AND RESPIRATORY (CONTROL) GROUPS CLASSIFIED BY VIRUS TYPE DURING TWELVE MONTHS FROM APRIL, 1957

| Virus type | Diarrhœa | Control |
|---|---|---|
| ECHO 6 | 1 | .. |
| ,, 7 | 21 | 3 |
| ,, 9 | 1 | .. |
| ,, 11 | 2 | .. |
| ,, 13 | 4 | .. |
| Coxsackie B3 | 1 | .. |
| ,, A9 | 15 | 5 |
| Poliovirus 1 | 18 | 6 |
| ,, 2 | .. | 1 |
| ,, 3 | 2 | 2 |
| Unidentified agents | 10 | .. |

Whereas a virus was isolated from the stool of 22% of diarrhœal children, a bacterium was found in 36·5% or 123 instances. The distribution of bacterial types is shown in table IV. The highest isolation-rate of pathogenic *Escherichia coli* occurred, as expected, in the under-1 age-group, while the proportion of *Shigella sonnei* increased to a maximum in the 3–5-year group.

A specific intestinal pathogenic bacterium and a virus were isolated from the same stool specimen in 23 instances (6·8%) in the diarrhœa group. No systematic bacterial examinations were performed on stools from the control group without diarrhœa, and therefore the corresponding rate of double isolations cannot be calculated. The types of combination found in the diarrhœa group are shown in table V. By far the commonest finding was the combination of *Sh. sonnei* with either Coxsackie virus A9 or ECHO virus 7.

TABLE IV—FREQUENCY OF ISOLATION OF PATHOGENIC BACTERIUM FROM THE STOOLS OF 338 CHILDREN ADMITTED TO HOSPITAL WITH DIARRHŒA AT DIFFERENT AGE-LEVELS

| Age (yr.) | No. in group | *Sh. sonnei* | *Sh. flexneri* | Pathogenic *Esch. coli* | Other |
|---|---|---|---|---|---|
| <1 | 195 | 21 (11%) | 5 (2·5%) | 15 (7·5%) | 3* (1·5%) |
| 1–2 | 99 | 45 (46·5%) | 7 (7%) | .. | .. |
| 3–5 | 44 | 25 (57%) | 2 (4·5%) | .. | 1† (2%) |
| Totals | 388 | 91 (27%) | 14 (4%) | 15 (4·5%) | 4 (<1%) |

* A staphylococcus was isolated in each instance.
† This organism was a member of the salmonella group.

A total of nine unidentified agents was isolated from the fæces of patients in the diarrhœa group. These were not neutralised by antiserum prepared against the three polioviruses, Coxsackie viruses B1–5 and A9, ECHO viruses types 1–14, and adenoviruses 1–8. The pathogenicity of these agents for suckling and adult mice is being examined, together with further neutralisation tests using antisera

TABLE II—FREQUENCY OF ISOLATION OF VIRUSES FROM STOOLS OF 338 CHILDREN ADMITTED TO HOSPITAL WITH DIARRHŒA AND FROM CHILDREN ADMITTED WITH RESPIRATORY ILLNESS AT DIFFERENT AGE-LEVELS

| Group | Age (yr.) | No. in group | ECHO virus | Poliovirus | Coxsackie virus | Other agent | Total isolations |
|---|---|---|---|---|---|---|---|
| Diarrhœa | <1 | 195 | 15 (7·5%) | 12 (6%) | 7 (3·5%) | 8* (4%) | 42 (21·5%) |
| | 1-2 | 99 | 11 (11%) | 5 (5%) | 7 (7%) | 2 (2%) | 25 (26%) |
| | 3-5 | 44 | 3 (7%) | 3 (7%) | 2 (4·5%) | .. | 8 (18·5%) |
| | Totals | 338 | 29 (8·5%) | 20 (5·9%) | 16 (4·7%) | 10* (2·9%) | 75 (22%) |
| Respiratory | <1 | 66 | 1 (1·5%) | 5 (7·5%) | 4 (6%) | .. | 10 (15%) |
| | 1-2 | 33 | 2 (6%) | 3 (9%) | 2 (6%) | .. | 7 (21%) |
| | 3-5 | 16 | .. | .. | .. | .. | .. |
| | Totals | 115 | 3 (2·6%) | 8 (7%) | 6 (5·2%) | .. | 17 (14%) |

* Includes one adenovirus type 2.

TABLE V—VIRUS AND BACTERIAL TYPES FOUND IN THE SAME STOOL SPECIMEN FROM 338 CHILDREN ADMITTED TO HOSPITAL WITH DIARRHŒA

| Virus type | Bacterial type | | | |
|---|---|---|---|---|
| | *Sh. sonnei* | *Sh. flexneri* | Pathogenic *Esch. coli* | Other |
| ECHO 7 .. .. | 5 | .. | .. | .. |
| ,, 9 .. .. | 1 | .. | .. | .. |
| ,, 13 .. .. | 1 | .. | .. | .. |
| Coxsackie A9 .. | 9 | 1 | .. | 1 |
| Poliovirus type 1 | 2 | .. | .. | 1 |
| Other .. .. | .. | 1 | 1 | .. |

prepared against the more recently isolated ECHO viruses and cross-neutralisation tests with antiserum prepared against each unidentifiable virus. The possibility of combinations of two different viruses cannot be excluded at this stage. No unidentifiable agents were recovered from the non-diarrhœal stools of the control group.

### Comment

The proof of a causal association between an enterovirus and the disease it may have produced depends on two factors. Firstly the agent must be isolated from cases of the disease with sufficient frequency to demonstrate a significant association; secondly there must be a demonstrable and significant increase in antibody titre during the illness to the agent isolated. In the case of diarrhœa, evidence is being accumulated which strongly suggests that a causal association may exist with certain enteroviruses.

Eichenwald et al. (1958), both by demonstrating rising antibody titres and by virus isolation, were able to state categorically that ECHO virus type 18 was the causal agent of two related outbreaks of diarrhœa among young children in hospital. Ramos-Alvarez and Sabin (1958) demonstrated a rise in antibody titre to the agent isolated from the stool in 24 young patients with diarrhœa. The agents in their group included several strains of ECHO virus, Coxsackie B2, B4, B5, and A9, and poliovirus type 1.

In the present investigation the greater number of ECHO viruses and untyped agents isolated from the diarrhœa group suggests that a causal association may exist, although the results are not formally significant and are unsupported by serological data. If the possibility of a causal association is accepted, however, it is of interest to compare rates of isolation of viruses and bacteria in relation to different age-groups, as in table VI. The smaller number of viruses isolated contrasts sharply with the increasing proportion of bacteria as the age of the patient increases. Also of interest is the increasing number of isolations when virus and bacterium are considered together with age of the patient.

The investigation is continuing, and serological studies are now being undertaken in an effort to ascertain the pathogenic relationship of the enteroviruses which can be isolated to the diarrhœa with which they appear to be associated.

TABLE VI—FREQUENCY OF ISOLATION OF VIRUS OR BACTERIUM FROM THE STOOLS OF 338 CHILDREN AT DIFFERENT AGE-LEVELS ADMITTED TO HOSPITAL WITH DIARRHŒA

| Age (yr.) | No. in group | Bacterium | Virus | Total isolations |
|---|---|---|---|---|
| <1 | 195 | 44 (22·5%) | 42 (21·5%) | 86 (44·5%) |
| 1–2 | 99 | 52 (53·3%) | 25 (26%) | 77 (78·5%) |
| 3–5 | 44 | 27 (63·5%) | 8 (18·5%) | 35 (82·5%) |
| Totals | 338 | 123 (36·5%) | 75 (22%) | 198 (58·5%) |


### Summary

During a year from April, 1957, 75 enteroviruses were isolated from the stools of 338 children, all 5 or less years of age, admitted to hospital with diarrhœa. From the control group of 115 children admitted to hospital with respiratory infections 17 enteroviruses were isolated. The proportion of polioviruses and Coxsackie viruses was similar in both groups, but the number of ECHO viruses isolated from the diarrhœa group was greater, although not significantly, than in the control group.

The enteroviruses isolated included three types of poliovirus, Coxsackie virus types B1, B3, and A9, and ECHO virus types 6, 7, 9, 11, and 13. The most frequently encountered viruses were ECHO 7, Coxsackie A9, and poliovirus type 1. In 23 instances an enterovirus and a pathogenic bacterium were isolated from the same stool specimen. The commonest combination consisted of *Sh. sonnei* and either ECHO 7 or Coxsackie A9.

A virus was isolated from 22% of the diarrhœa group, and a specific intestinal pathogenic bacterium from 36·5%, making a total isolation-rate of 58·5% for the whole series. The total isolation-rate, considered in relation to age-group, was lowest (44·5%) for children less than 1 year old, but averaged 80% between 1 and 5 years.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## PLEURAL BIOPSY IN THE DIAGNOSIS OF PLEURAL EFFUSION

### A REPORT OF 200 CASES *


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SINCE January, 1957, we have been carrying out punch biopsy of the parietal pleura, using the Harefield needle (Abrams 1958), in patients with fluid in the chest and in some with pleural shadowing of unknown origin. Our early findings have already been reported (Mestitz et al. 1957). We can now analyse our results in more detail and discuss their relevance to current diagnostic concepts of pleural effusions (Mestitz and Pollard 1959).

### Clinical Material and Methods

228 pleural biopsies were carried out on 200 patients most of whom had an effusion at the time of the investigation. They were seen at one of several hospitals.

* Part of this work was included by one of us (M. J. P.) in a thesis for the degree of M.D. in the University of Cambridge.


† Present address: Middlesex Hospital, London, W.1.
‡ Present address: St. George's Hospital, London, S.W.1.

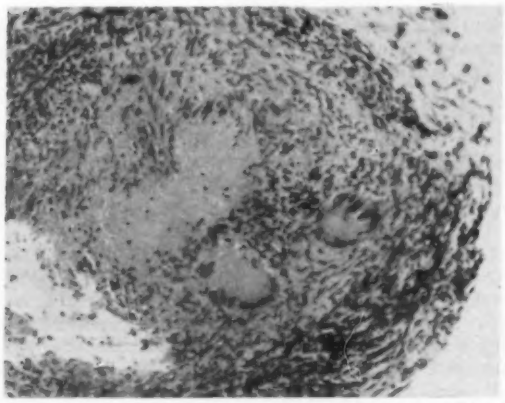

**Fig. 1—Tuberculous granulation tissue in the parietal pleura, showing central caseation. (× 135.)**

**Fig. 2—Metastatic carcinoma of the bronchus in the parietal pleura. (× 135.)**

Since January, 1957, all patients with a pleural effusion admitted to the Royal Air Force Chest Division at Wroughton have had a pleural biopsy as part of their initial investigations. From a somewhat later date most patients with effusions seen at the Army Chest Centre at the Connaught Hospital have also had biopsies, though not always as our initial test. At both these centres the patients are predominantly Servicemen between the ages of 18 and 25, and most of the effusions might therefore be expected to be tuberculous. The remaining cases were seen in civilian hospitals in the London and Reading areas, and at other Service hospitals. Some physicians asked us to see all pleural effusions that came under their care; others referred to us only those cases in which other diagnostic techniques had failed.

Whenever possible biopsies were performed before treatment. The ages of our patients ranged from 3 to 85 years. We discovered no contraindication to pleural biopsy, though we would not advise it in patients with hæmorrhagic disease. No patient refused a second biopsy.

Using the Harefield needle, we carry out aspiration and punch biopsy in one operation. Trivial complications in this series have been 1 subcutaneous hæmatoma and 1 small pneumothorax. In a young man with lymphosarcoma some of the pleural fluid drained into the subcutaneous tissues of the flank for twelve hours after biopsy, and we have since heard of another patient who, eighteen months after the biopsy, developed secondary deposits along the needle track (J. W. Jackson, personal communication); biopsy had shown malignant tissue in the pleura. In practised hands the procedure is no more distressing to the patient than an ordinary chest aspiration, and it takes only a few minutes longer.

In addition to full clinical examination and chest X-ray, the patients' erythrocyte sedimentation-rate, leucocyte-count, and tuberculin reaction were determined; and their sputum was examined for tubercle bacilli, and for malignant cells where indicated. Examination of the pleural fluid consisted in naked-eye examination, differential white-cell count, 48-hour culture, and culture or guineapig inoculation for tubercle bacilli in most but not all cases, together with a search for malignant cells where indicated.

We divided our cases into three groups. Group I consisted of patients who had a pleural effusion and in whom our first object was to determine its cause. In group II the pleural effusion was not the outstanding clinical feature and its ætiology not the foremost clinical problem. Group III included the remaining cases—those with residual pleural thickening, with solid lesions in or near the pleura, or with no radiological evidence of pleural disease.

Though we excluded patients with clear radiological evidence of pulmonary tuberculosis, group I was still the

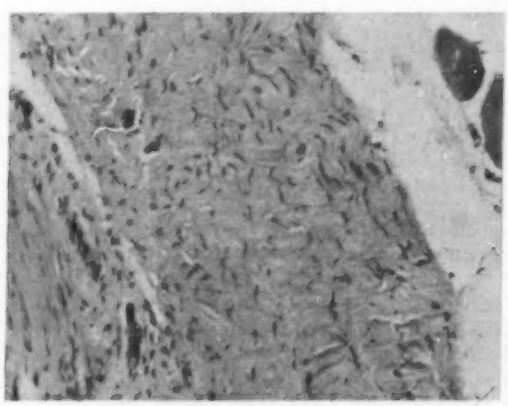

**Fig. 3—Fibrous thickening of the parietal pleura in a case of chronic pleural effusion. (× 135.)**

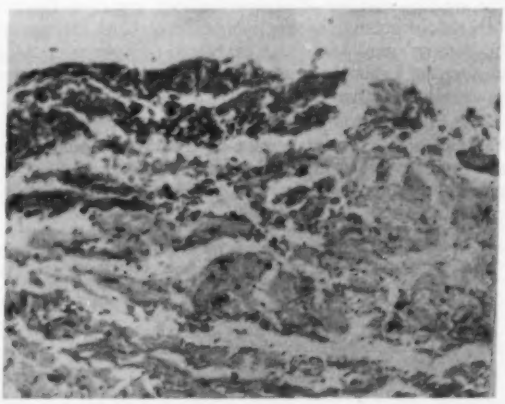

**Fig. 4—Pleural-cell proliferation, mimicking malignant invasion of the pleura. (× 135.)**

largest. Trying to predict the cause of the effusion on clinical grounds we found that our initial diagnoses were determined largely by three factors.

1. The age of the patient. In those over 40 we were apt to suspect malignancy.

2. The symptoms and their mode of onset. The more vague the symptoms, and the more insidious the onset, the more inclined were we to diagnose tuberculosis. With clearly defined symptoms of acute onset our tendency was to diagnose a pyogenic infection.

3. We were naturally influenced by what was known of the patient's previous history—an earlier radical mastectomy or proven bronchiectasis for example.

### Biopsy Material

The biopsy specimens are cubes or strips 2–3 mm. long, and they are fixed in 10% formol-saline. Macroscopically an adequate specimen consists of pink intercostal muscle, and an adjoining white or grey portion. This latter varies in thickness and texture: normal pleura is very thin, glistening, and pearly white; whereas in a granulomatous disease like tuberculosis it may be much thicker than the muscle and appear dull, grey, and spongy. With an unsatisfactory technique the specimen may be little more than a block of muscle, with or without a few shreds of fibrous tissue. If microscopy confirms this, the specimen must be classified as "inadequate."

The specimens are blocked and sectioned in the usual way. Routine staining is by hæmatoxylin and eosin; other stains are used when indicated. We find it useful to mount strips of up to seven consecutive sections on each slide. On a few occasions initial doubts were resolved after mounting more sections cut deeper in the block.

### Histological Findings

The invariable presence of striated (intercostal) muscle serves to orientate the observer: the pleural surface never appears as an unbroken endothelial membrane. Normal sections show striated muscle deep to the subpleural layer. This consists of a few small blood-vessels in a narrow band of fibro-fatty tissue, and it is here that pathological changes can be diagnosed. On the free margin one usually sees a few pleural (endothelial) cells, either singly or in small groups. Compression of the specimen by the punch sometimes gives rise to artefacts, similar to those seen in some bronchial biopsy specimens.

*Tuberculous Pleurisy*

The diagnosis is usually obvious: the criteria are the same as for tuberculosis elsewhere.

The typical foci in the subpleural layer may be discrete or confluent (fig. 1). In the healing phase subpleural fibrosis can be prominent, but at no time are reactive pleural cells conspicuous. The tuberculous process does not involve muscle. Ziehl-Neelsen staining of the sections is generally unrewarding; only in 1 out of about 30 histologically proved specimens did we identify with certainty acid-alcohol-fast mycobacteria. We did not culture specimens; but in the rare doubtful case we examined serial sections through the entire thickness of the block.

*Malignant Infiltration*

In most cases where a biopsy diagnosis could be made, the decision was reached without difficulty. It rested on finding groups or clumps of cells showing the histological features of malignancy.

These cells are in the subpleural tissue and may be associated with an inflammatory or a pleural-cell reaction, or with both. One's impression of malignancy can often be confirmed by noting penetration of atypical cells between the fibres of the intercostal muscle: otherwise differentiating them from bizarre reactive pleural cells can be difficult (figs. 2 and 4). It is seldom possible to be sure of the site of origin of the malignant cells: we have seen metastases from the bronchus, breast, pancreas, gut, and ovary. A solid peripheral lung lesion proved to be a metastasis from a giant-cell tumour of bone, and in a case of lymphosarcoma the specimen was infiltrated throughout with atypical round cells.

TABLE I—BIOPSY DIAGNOSES IN THE WHOLE SERIES

| Group | Number of cases | Biopsy results | | | |
|---|---|---|---|---|---|
| | | Tuberculous | Malignant | Not diagnostic | Inadequate |
| I | 152 | 70 | 21* | 59 | 2 |
| II | 36 | 1 | 10 | 24 | 1 |
| III | 12 | .. | 2 | 9 | 1 |
| Totals | 200 | 71 | 33 | 92 | 4 |

* Includes 1 misdiagnosis.

*Non-diagnostic*

In this group we found no specific histological features. The cases could be divided into three groups, though there was much overlap between them.

*Acute inflammatory reactions.*—Here the whole pleura is replaced by exuberant acute inflammatory granulation tissue. This can often be correlated with a pyogenic chest infection.

*Chronic inflammatory reactions.*—In this group the subpleura is infiltrated by chronic inflammatory cells, and there is a variable degree of fibrosis and blood-vessel formation. In an extreme case, in which the effusion had been present for sixteen years, the pleura was replaced by acellular hyaline fibrous tissue (fig. 3). In 4 cases, in which the effusion was associated with rheumatoid arthritis, the biopsis showed fibrous thickening with small foci of fibrinoid necrosis in the mature collagen. Although not diagnostic, this was in keeping with a collagen disease.

*Pleural-cell reaction.*—This is characterised by varying degree of pleural-cell proliferation throughout the subpleura. Sometimes these cells are localised, and frequent mitoses can suggest malignant disease (fig. 4).

### Discussion

174 patients had one biopsy, 24 patients had two, and 2 patients had three. In 1 of these tuberculosis was diagnosed only on the third occasion: the first two biopsies had shown only non-specific inflammation. 8 out of 223 specimens were inadequate, and in 4 of the 200 patients no adequate specimen was ever obtained.

Table I shows that of 104 diagnoses made by biopsy alone, only 1 subsequently proved to be wrong. Biopsy alone gave the diagnosis in just over half the cases, and it was strikingly more successful in group I than in groups II and III.

TABLE II—CORRELATION BETWEEN INITIAL CLINICAL AND BIOPSY DIAGNOSES IN GROUP I

| Initial diagnosis | Number of cases | Biopsy results | | | | |
|---|---|---|---|---|---|---|
| | | Malignant | Tuberculous | Non-diagnostic | | Inadequate |
| | | | | Acute inflammatory | Other appearances | |
| Malignant | 42* | 14* | 7 | 2 | 18 | 1 |
| Tuberculous | 95 | 7 | 62 | 3 | 23 | .. |
| Pyogenic | 15† | .. | 1 | 5 | 8† | 1 |
| Totals | 152 | 21 | 70 | 10 | 49 | 2 |

* Include 1 misdiagnosis. † Includes 1 pulmonary infarct.

TABLE III—CORRELATION BETWEEN INITIAL CLINICAL AND FINAL DIAGNOSES IN GROUP I

| Initial diagnosis | Number of cases | Final diagnoses | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Malignant | | Tuberculous | | Pyogenic | | Not known |
| | | Proved | Probable | Proved | Probable | Proved | Probable | |
| Malignant | 42 | 21 | 3 | 7 | .. | 3 | 4 | 4 |
| Tuberculous | 95* | 8 | .. | 65 | 12 | 1 | 1 | 8 |
| Pyogenic | 15† | 1 | .. | 1 | .. | 5 | 8 | .. |
| Totals | 152 | 30 | 3 | 73 | 12 | 9‡ | 13 | 12 |
| | | 33 | | 85 | | 22 | | |

* 2 patients had both carcinoma and tuberculosis.
† Includes 1 infarct.
‡ Includes 2 cases of pulmonary infarct.

In table II the biopsy diagnoses are compared with the initial clinical opinions on patients in group I. It will be seen that the history and physical signs often lead to a false assessment. That one of the advantages of pleural biopsy is the early correction of a wrong clinical diagnosis is further illustrated by the following case-histories.

TABLE IV—THE NON-DIAGNOSTIC BIOPSIES IN GROUP I

| Initial diagnosis | Number of cases | Final diagnoses | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Malignant | | Tuberculous | | Pyogenic | | Not known |
| | | Proved | Probable | Proved | Probable | Proved | Probable | |
| Malignant | 20 | 7 | 3 | .. | .. | 2 | 4 | 4 |
| Tuberculous | 26 | 1 | .. | 3 | 12 | 1 | 1 | 8 |
| Pyogenic | 13* | 1 | .. | .. | .. | 5* | 7 | .. |
| Totals | 59 | 9 | 3 | 3 | 12 | 8 | 12 | 12 |
| | | 12 | | 15 | | 20 | | |

* Includes 1 pulmonary infarct.

A man, aged 51, a heavy smoker all his life, was admitted with a history of weight-loss, increasing dyspnoea for four months, and vague chest pain for three weeks. He was wasted and afebrile, and he had an enormous left pleural effusion. The clinical diagnosis was an inoperable carcinoma of the bronchus. Pleural biopsy showed tuberculous granulation tissue, and on chemotherapy he made an uninterrupted recovery. Culture and guineapig inoculation of the fluid for tubercle bacilli were negative.

A man aged 31 had previously had a short course of chemotherapy for pulmonary tuberculosis. In June, 1957, he was readmitted with weight-loss, cough, and pleuritic pain. He had a low-grade fever, and a small pleural effusion. Lymphocytic fluid was aspirated. Pleural biopsy showed malignant invasion of the pleura. A bronchial carcinoma was found at necropsy.

A man aged 56 was admitted with a small right pleural effusion, infiltration in the right upper lobe, and a sputum positive for tubercle bacilli. Pleural biopsy suggested malignant invasion of the pleura. In spite of antituberculous drugs, he died, and necropsy confirmed the dual pathology.

A woman aged 75 had been unwell for a month or more. She had increasing dyspnœa, cough and sputum, and possibly haemoptysis. She had a pleural effusion of moderate size and fever unresponsive to penicillin and aureomycin. Her physician diagnosed tuberculosis. Pleural biopsy showed acute inflammation strongly suggestive of pyogenic infection. The aspirate at the time of the biopsy contained 90% polymorphs, but the forty-eight-hour culture was reported as "contaminated". She was not given antituberculous drugs. Some four weeks later a sterile empyema was drained by rib-resection, and she made a full recovery.

TABLE V—THE SIGNIFICANCE OF ACUTE INFLAMMATORY BIOPSIES IN GROUP I

| Definitive diagnoses | Number of cases |
|---|---|
| Proved pyogenic .. .. .. .. .. .. | 7 |
| Probably pyogenic .. .. .. .. .. .. | 1 |
| Probably tuberculous .. .. .. .. .. .. | 1 |
| Not known .. .. .. .. .. .. .. | 1 |
| Total .. .. .. .. .. .. .. .. | 10 |

In table III we compare the initial clinical assessments of patients in group I with the final diagnoses, by whatever means they were reached. 59 adequate biopsies in group I did not allow a firm histological diagnosis. Table IV sets out the final diagnoses in all these 59 patients, while table V shows the final diagnoses of the 10 whose biopsy had suggested an acute pyogenic infection.

TABLE VI—MEANS BY WHICH THE DEFINITIVE DIAGNOSIS WAS REACHED IN GROUP I

| Diagnosis | Number of cases | Diagnosis made by | |
|---|---|---|---|
| | | Biopsy | Other means |
| Tuberculous .. .. .. | 73 | 70 | 3 |
| Malignant .. .. .. .. | 30 | 20 | 10 |
| Pyogenic* .. .. .. .. | 9 | 7* | 9 |
| Totals .. .. .. .. | 112 | 97* | 22 |

* In 7 cases biopsy showed an acute inflammatory reaction in the pleura.

TABLE VII—THE VALUE OF RECENT METHODS OF DIAGNOSING PLEURAL DISEASE

| Authors | Method | Number of cases | Total diagnoses | Diagnosis | | |
|---|---|---|---|---|---|---|
| | | | | Tuberculous | Malignant | Pyogenic |
| Carstensen (1940) .. .. .. | Thoracoscopy | 86 | 72 | 72 | .. | .. |
| Sutliff et al. (1954) .. .. | Surgical biopsy | 21 | 20* | 17 | 2 | .. |
| Stead et al. (1955) .. .. | Thoracotomy and full exploration | 24 | 15 | 15* | .. | .. |
| Breckler et al. (1956) .. .. | Surgical biopsy | 16 | 10 | 9 | 1 | .. |
| Heller et al. (1956) .. .. | Aspiration biopsy (Vim-Silverman needle) | 20 | 9 | 5 | 4 | .. |
| Donohoe et al. (1958) .. .. | Aspiration biopsy (Vim-Silverman needle) | 78† / 132† | 50 / 58 | 22 / 45 | 8 / 13 | .. / .. |
| | Surgical biopsy | 54† | 28 | 23 | 5 | .. |
| Present series .. .. .. | Punch biopsy of pleura (Harefield needle) | 152 | 97 | 70 | 20 | 7 |

* Includes 1 case of blastomycosis. † The figures refer to the number of biopsies. 111 patients were investigated.

This histological finding may have a definite diagnostic value, but more cases are required to confirm this.

Table VI shows how the diagnoses in group I were reached. Of 30 patients who were proved to have a malignant intrathoracic growth associated with a pleural effusion biopsy was negative in 10. Thus no reliance can be placed on negative biopsies; a plaque of growth on the pleura is easily missed in a blind biopsy. From our small series it would appear that in pleural effusions associated with intrathoracic malignant disease biopsy will give a false negative result in about half the cases.

In tuberculous effusions the picture is different. In group I we had 73 such cases, and in only 3 was biopsy negative and bacteriological examination positive. Of the 70 in whom biopsy was positive, bacteriology was negative in 45. There were 12 further patients in this group in whom the effusion was probably tuberculous. If we accept 85 as the total number, then in tuberculous pleural effusion biopsy will be positive four times out of five. The chances of obtaining a positive biopsy are uninfluenced by the size and white-cell count of the effusion, the presence of parenchymal lung shadows, the antituberculous chemotherapy already given (though we have not had sufficient experience with cases treated for more than six weeks), and the duration of the symptoms.

Because of the wide variety of diseases in groups II and III, an overall analysis was not worth while.

In 1 patient with sarcoidosis, the pleura was normal. Another patient, diagnosed on scalene-node biopsy, developed a small pleural effusion six months later. Biopsy of the pleura showed non-specific fibrous thickening. Of 6 patients with reticulosis and pleural effusion 1 was shown by biopsy to have a lymphocytic tumour involving the pleura. 2 solid tumours have been biopsied with the needle—a giant-cell tumour of bone lying deep to the pleura and an osteosarcoma of rib.

Jacobæus (1911, 1925) and Unverricht (1923) described tuberculous granulation tissue in both pleural membranes in cases of tuberculous effusions. Table VII summarises published data of later workers. Donohoe et al. (1958) believe that a non-diagnostic needle biopsy has no value, and that it should always be followed by a full surgical biopsy. Our needle is probably technically superior, and negative biopsies have had at any rate some significance in our series. We feel, however, that needle biopsy will not altogether eliminate the need for surgical biopsy, and that the latter should be considered where other methods have failed.

Donohoe et al. (1958) found non-specific inflammatory changes in 21 of their 54 surgical biopsy specimens: and in only 5 of them was a definite diagnosis (tuberculosis) afterwards proved. They suggest that there exists a "non-specific pleuritis", possibly a virus infection, which is akin to non-specific acute pericarditis and which consists of a transient acute effusion. 2 cases of "fibrinous pleuritis" described by Douglass et al. (1956) were possibly examples of the same condition; and we have seen 2 that may also fall into this category.

### Conclusions and Summary

We report our experience with blind punch biopsy of the parietal pleura in 200 patients.

The method is simple and safe. Since it can establish the diagnosis in about 80% of tuberculous and 60% of malignant effusions, it is by far the most reliable diagnostic technique when tuberculosis is suspected.

We have had only 1 false diagnosis in 228 biopsies.

This procedure may be the only way of making a definite diagnosis during life. It should be part of the initial investigation of every patient with a pleural effusion of uncertain ætiology.

We are grateful to Dr. Drew Thomson and Dr. H. Dexter for their invaluable help with the pathological side of this work.

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## IN-VITRO ACTIVITY OF RISTOCETIN AND FRAMYCETIN

### TWO NEW ANTIBIOTICS

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As the search for new antibiotics continues, it is important that the in-vitro activity of each new product should be carefully determined in order to obtain some knowledge of its therapeutic possibilities. We have consequently investigated the in-vitro activity of two recently introduced antibiotics, ristocetin and framycetin.

Ristocetin ('Spontin' Abbott) is a new narrow-range antibiotic, isolated from cultures of a species of Actinomycete, *Nocardia lurida*; it has two components, ristocetin A and B, which have a similar range of activity against gram-positive bacteria and mycobacteria (Grundy et al. 1958).

Framycetin is an antibiotic produced by a strain of *Streptomyces decaris* (R.2103) and is available as the sulphate salt ('Soframycin' Roussel). A wide range of activity is claimed, including *Staphylococcus aureus*, *Pseudomonas pyocyanea* and the proteus group (Massénat-Déroche 1954).

Both ristocetin and framycetin are freely soluble in water and are stable for at least four months when stored in aqueous solution (20,000 μg. per ml.) at 4°C.

### Methods

The sensitivity of freshly isolated common pathogens to the two antibiotics was assessed by our standard serial dilution technique (Fairbrother and Williams 1956). A standard drop (0·02 ml.) of an undiluted overnight broth culture was added to 0·5 ml. of nutrient broth or serum broth containing doubling dilutions of the antibiotic, and the results were read after 18 hours' incubation at 37° C.

### Results

*Ristocetin*

140 organisms were tested against ristocetin by the serial dilution technique, and the results show particular activity against gram-positive cocci with little effect against gram-negative organisms (table I). The pneumococcus was the most sensitive organism; all strains were inhibited by 2 μg. per ml.; *Str. pyogenes* (group A) was

TABLE I—SENSITIVITY TESTS WITH RISTOCETIN AND FRAMYCETIN BY THE SERIAL DILUTION TECHNIQUE

| Minimum inhibitory concentration (μg. per ml.) | *Staph. aureus* | | *Str. pyogenes* | | *Str. fæcalis* | | Pneumococcus | | Coliforms | | Proteus | | *Ps. pyocyanea* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R | F | R | F | R | F | R | F | R | F | R | F | R | F |
| 2 | .. | .. | 3 | .. | 1 | .. | 5 | .. | .. | .. | .. | .. | .. | 1 |
| 4 | .. | 6 | 10 | .. | 8 | .. | .. | 5 | .. | .. | .. | .. | .. | 1 |
| 8 | 4 | 8 | .. | .. | 5 | .. | .. | .. | .. | 2 | .. | .. | .. | 3 |
| 16 | 37 | 25 | .. | .. | .. | .. | .. | .. | .. | 7 | .. | 1 | .. | 6 |
| 32 | 9 | 9 | .. | 2 | .. | .. | .. | .. | .. | 11 | .. | 5 | .. | 4 |
| 64 | .. | 2 | .. | 4 | .. | 2 | .. | .. | .. | 16 | .. | 15 | .. | 6 |
| 128 | .. | .. | .. | 3 | .. | 3 | .. | .. | .. | 7 | .. | 4 | .. | 2 |
| 256 | .. | .. | .. | 4 | .. | 9 | .. | .. | .. | 2 | .. | 1 | .. | .. |
| >256 | .. | .. | .. | .. | .. | .. | .. | .. | 25 | .. | 16 | .. | 17 | .. |
| Total | 50 | 50 | 13 | 13 | 14 | 14 | 5 | 5 | 25 | 45 | 16 | 26 | 17 | 23 |

R = ristocetin. F = framycetin.

also very sensitive, 3 of 13 strains were inhibited by 2 μg. per ml. and the remaining 10 strains were inhibited by 4 μg. per ml. *Str. fæcalis* was also sensitive; none of the 14 strains examined required more than 8 μg. per ml. for inhibition of growth.

*Staph. aureus* was relatively resistant, and of 50 strains only 4 were inhibited by 8 μg. per ml.; the majority (37) required 16 μg. per ml., while 9 required 32 μg. per ml., to inhibit growth.

Gram-negative bacilli proved resistant and were not inhibited by at least 256 μg. per ml.

*Framycetin*

176 organisms were tested against framycetin (table I). The results show a wide range of activity against both gram-positive and gram-negative organisms, with, in some cases, considerable variation in sensitivity between different strains of the same organism. The pneumococcus proved the most sensitive organism; all strains were inhibited by 4 μg. per ml. Strains of *Staph. aureus* showed wide differences in their sensitivity. Of 50 strains 6 were inhibited by 4 μg. per ml.; but 25 were relatively resistant, requiring 16 μg. per ml. to inhibit growth; whilst 2 required 64 μg. per ml. *Str. pyogenes* (group A) and *Str. fæcalis* showed a similar pattern, and were both moderately resistant; the 13 strains of *Str. pyogenes* required 32–256 μg. per ml. for inhibition and the 14 strains of *Str. fæcalis* were only inhibited by 64–256 μg. per ml.

Framycetin showed very variable activity against the gram-negative organisms; 5 of 23 strains of *Ps. pyocyanea* could be classified as sensitive, requiring 8 μg. per ml. or less to inhibit growth; of the remaining 18 strains 2 required as much as 128 μg. per ml. to inhibit growth.

The average minimum inhibitory concentration (M.I.C.) for coliforms and proteus was 64 μg. per ml., but occasional strains required 256 μg. per ml.—which exceeds practical levels attainable in the tissues.

*Development of Resistance*

*Framycetin.*—It has been claimed that resistance in-vitro to framycetin is slow to develop (Massénat-Déroche 1954), but we have not been able to confirm this. Strains of *Staph. aureus* and *Ps. pyocyanea* were grown in nutrient broth containing antibiotic, as in the serial dilution technique. After 18 hours' incubation at 37°C, the M.I.C. was read, and the broth containing the highest concentration of antibiotic permitting growth was used as the inoculum for a second series. Passages were continued in this way, and the M.I.C. was recorded 18 hours after each passage. The results (table II) show that in-vitro resistance to framycetin develops rapidly; at the third passage, the three strains of *Staph. aureus* investigated showed a threefold increase in resistance; at the twelfth passage, two of the strains showed an eightfold increase in resistance and required more than 1024 μg. per ml. for inhibition of growth. *Ps. pyocyanea* showed an even more rapid development of resistance; at the third passage the five strains investigated showed threefold to sixfold increase, and at the sixth passage three of the strains showed sixfold to eightfold increase in resistance. One strain acquired an eightfold increase in resistance at the ninth passage. In all cases the experiment was terminated when the M.I.C. was greater than 1024 μg. per ml.

*Ristocetin.*—A similar experiment was conducted with ristocetin using the same three strains of *Staph. aureus* and one strain of *Str. fæcalis*. The results (table II) show

TABLE II—ACQUIRED RESISTANCE IN VITRO TO FRAMYCETIN AND RISTOCETIN

| No. of passage | Fold increase in resistance | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Framycetin | | | | | | | | Ristocetin | | | |
| | *Staph. aureus* (1) | *Staph. aureus* (2) | *Staph. aureus* (3) | *Ps. pyocyanea* (1) | *Ps. pyocyanea* (2) | *Ps. pyocyanea* (3) | *Ps. pyocyanea* (4) | *Ps. pyocyanea* (5) | *Staph. aureus* (1) | *Staph. aureus* (2) | *Staph. aureus* (3) | *Str. fæcalis* |
| 3rd | 3 | 3 | 3 | 6 | 6 | 5 | 5 | 3 | 0 | 0 | 0 | 2 |
| 6th | 4 | 4 | 4 | .. | .. | 8 | 7 | 6 | 2 | 0 | 2 | 2 |
| 9th | 6 | 5 | 5 | .. | .. | .. | .. | 8 | 2 | 2 | 2 | 2 |
| 12th | .. | 8 | 8 | .. | .. | .. | .. | .. | 2 | 2 | 2 | 2 |

only a twofold increase in resistance after twelve passages, with all strains.

## Comments

*Ristocetin*

Our results indicate that, while ristocetin has a similar range of antibacterial activity to penicillin, erythromycin, bacitracin, and vancomycin, its clinical application is likely to be limited. It has to be given intravenously and therefore its administration presents difficulties; moreover it exhibits only moderate antibacterial activity. It may, however, prove useful in the treatment of infections due to antibiotic-resistant *Staph. aureus* and of enterococcal endocarditis; several such cases have been treated successfully (Taylor et al. 1958, Romansky and Holmes 1958). Disadvantages are associated with the administration of ristocetin; following its use minor reactions, such as rashes, thrombophlebitis at the site of injection, neutropenia and thrombocytopenia have been reported (Gangarosa 1958).

*Framycetin*

Framycetin has a wide range of antibacterial activity, but cannot be given parenterally as it is highly toxic to the kidneys and the eighth cranial nerve. It is usually applied topically in the form of an ointment containing 1·5% framycetin sulphate in a water-miscible base, and good results have been claimed in cases of superficial skin infections, especially those due to *Staph. aureus* (Burrows 1958). It should prove useful also in the treatment of superficial infections due to the more sensitive strains of *Ps. pyocyanea* and proteus as relatively high concentrations can be applied. It has also been used orally, with good results and absence of toxicity, in cases of infantile gastroenteritis due to pathogenic *Escherichia coli* (Louwette and Lambrechts 1958).

In-vitro tests, however, suggest that resistance can develop rapidly and caution will have to be exercised in its general use. Also, the wide variation in sensitivity between different strains of the same organism necessitate critical in-vitro assessment of the sensitivity of the infecting organism in each individual case.

### Conclusion

Sensitivity tests by the serial dilution technique indicate that ristocetin is effective against gram-positive cocci, and that framycetin is moderately effective against both gram-positive and gram-negative organisms.

Both antibiotics appear to have limited clinical applications and certain disadvantages, and there seems to be little indication for their general use in routine practice, although framycetin should be valuable for the local treatment of some superficial infections. Careful laboratory control is necessary.

We wish to thank Abbott Laboratories for the ' Spontin ' and Roussel Laboratories for the ' Soframycin '.

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## FILTERED LIQUID PLASMA FOR TRANSFUSION

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THE transfusion of unmodified human blood-plasma is associated with the risk of transmitting homologous-serum jaundice. Various methods of processing the plasma in order to inactivate the virus of this disease have been investigated and have resulted in products such as the following:

(1) Purified human albumin (Cohn et al. 1946), heat-treated in solution for 10 hours at 60°C in the presence of protein stabilisers.

(2) Crude albumin preparations which have been similarly heat-treated. These are obtained by precipitating the fibrinogen and part of the globulins from the plasma by the addition of zinc salts (Surgenor 1952), by alcohol fractionation (Mulford et al. 1955, Hink et al. 1957, Krijnen and Mastenbroek 1957), or by desalting with ion-exchange resins (Nitschmann et al. 1956).

(3) Plasma treated with β-propiolactone and irradiated with ultraviolet light (Hartman and LoGrippo 1957).

(4) Liquid plasma stored at 30–32°C for six months prior to use (Allen et al. 1954).

Of these, the last-named product is the simplest to prepare and is giving promising results from the point of view of virus inactivation (Allen et al. 1954). It has the serious disadvantage, however, that in the cloudy final product the visual detection of bacterial contamination is difficult.

In this laboratory a technique has been worked out for the preparation of a treated liquid plasma which does not have this disadvantage. The method makes use of the kaolin-treatment procedure of Maizels (1944), which permits the subsequent filtration of the plasma through asbestos pads. In the resulting clear liquid, bacterial contamination gives rise, after incubation, to opacity which is obvious on inspection. The clear plasma obtained by a single kaolin treatment is not stable, and a flocculent protein precipitate appears after it has stood at room temperature or at 32°C for two to six months.

Maizels observed that a second kaolin treatment, carried out after storing the plasma for six months or a year at room temperature, resulted in a clear product which was stable for at least two years. In the present investigation re-treatment with kaolin after storage for six months at the higher temperature of 32°C was therefore tried, to see whether a similar stable liquid product could be obtained.

### Method

Pools of liquid plasma (1800 ml.), obtained in the usual way from outdated blood which has been collected in standard acid-citrate-dextrose anticoagulant, are mixed with 120 g. kaolin in sterile Winchester bottles. After samples for sterility testing have been removed the bottles are shaken, frozen, and thawed. The plasma is decanted from the sedimented kaolin, pooled, filtered through clarifying and sterilising pads, and collected in sterile bottles. The sterility of each is then established by inspection after lengthy incubation both at room temperature and at 32°C. Storage at the latter temperature is continued for six months to inactivate the hepatitis virus. During this period some flocculent protein is precipitated.

At the end of the six months' storage the plasma is again examined for signs of bacterial contamination. It is then mixed with a further quantity of kaolin, shaken mechanically for an hour, frozen, thawed, filtered through clarifying and sterilising pads, and distributed in 400 ml. quantities. All the final containers are incubated at room temperature and then at 32°C, and inspected for signs of bacterial growth or moulds, before being released for clinical trial. The procedure is in addition controlled throughout in the usual way by bacteriological cultures on representative samples.

The liquid plasma thus obtained remains clear and translucent, except for a very slight trace of flocculent precipitate which appears shortly after the final filtration. This flocculation is too slight to interfere with detection of bacterial contamination by naked-eye inspection, nor has it increased appreciably on storage for a further nine months. The product contains 3·5–4% protein and has a pH of 6·5–7·0. The loss of plasma by occlusion in the sedimented kaolin totals about 12% by volume.

### Comment

In preliminary clinical trials, 5·2 litres of the material have been transfused into one patient over a period of six weeks, without adverse reaction or any clinical evidence of sensitisation.

The possibility of preparing the same material with a final protein content of 7·5% is under investigation. This would correspond more closely to the normal " in-vivo " plasma-protein content. The product may be freeze-dried, and on reconstitution gives a solution which is only slightly cloudy.

This method seems to be promising from the points of view of virus inactivation, safety, and economy; because the product is in liquid form it is convenient to handle. This plasma is deficient in fibrinogen and other clotting factors, and is therefore unsuitable for patients specifically requiring these substances.

*References overleaf*

## Preliminary Communication

# TRACER METHOD FOR LOCALISING LEFT-TO-RIGHT CARDIAC SHUNTS

FOR surgical repair of cardiac septal defects, pre-operative localisation must be accurate. Routine cardiac catheterisation may supply this information provided the catheter passes through the defect; but when it does not, localisation of a left-to-right shunt depends on measurements of oxygen saturation of blood taken from the right heart chambers. These may be misleading for two reasons:

(1) Incomplete mixing in the right atrium. Depending on whether the catheter tip is in either caval stream, near the coronary sinus, or near a septal defect, different values for oxygen saturation can be obtained.

(2) The presence of additional valvular incompetence. This may lead to the impression that the shunt is proximal to the chamber into which it actually passes. A ventricular septal defect with tricuspid incompetence may appear from the blood-samples to be an atrial septal defect.

Several techniques are in use to overcome these difficulties.

In *selective angiocardiography* [1] serial films are taken while radio-opaque media are injected via a catheter into the different chambers of the right heart. This method is effective for demonstrating atrial septal defects; but in ventricular septal defect and patent ductus arteriosus it fails unless the right-sided pressures are close to systemic levels, and such cases are unsuitable for surgery.

*Dye-dilution curves* obtained from a peripheral artery [2] after intracardiac injection differ in form according to whether the dye is injected proximal or distal to the site of the defect. This method is accurate but had the disadvantage that left-heart puncture or retrograde aortic catheterisation may be required; and when the shunt is small arterial curves may be normal.[3]

A different principle is the demonstration of the premature arrival in a right-sided chamber of some substance introduced into the left heart via the pulmonary circulation. At the National Heart Institute in Bethesda 15% nitrous oxide in air [4 5] is used for this purpose, and there has been a brief report [6] of the use of serum-albumen labelled with radioactive iodine, injected into the pulmonary circulation during cardiac catheterisation. These methods demonstrate a difference in arrival time which can be caused only by a short-circuit. We have also used nitrous oxide, and confirm the value of the method, but we feel that the intermittent sampling involved is a disadvantage. If the shunt is small, the rate of rise of nitrous-oxide concentration in the shunt chamber may not differ significantly from that in the chamber proximal; and valvular incompetence may cause difficulties of interpretation similar to those encountered with measurements of oxygen saturation. We have also observed that in children there may be a misleadingly rapid rise in mixed venous $N_2O$ concentration in the absence of a shunt.

We consider, therefore, that a radioactive indicator is preferable since this allows a continuous tracing, with an exact start-point, to be recorded from right-heart chambers. We use the patient's red cells labelled with radioactive phosphorus, and record simultaneously from two adjacent chambers, thus demonstrating a time-interval unaffected by the magnitude of the shunt.

### METHOD

The principle of the technique is shown in fig. 1.

Routine cardiac catheterisation is performed, using a twin-lumen catheter. After the usual procedure, the catheter is positioned with its distal lumen in the chamber thought to receive the shunt (on clinical grounds and naked-eye inspection of blood-samples) and its proximal lumen in the immediately proximal chamber. This is the sampling catheter. To each of its hilts is attached a length of polyethylene tubing shaped into a helix attached to a perspex jig which locates it with respect to an "end-window" Geiger counter (fig. 2); the other ends of the polyethylene are attached to a suction pump. Each counter is connected to a rate-meter whose output is recorded on a Sanborn "twin-viso" direct writer. A second single-lumen catheter (the injection catheter) is passed via another arm vein and its tip placed in the pulmonary artery. If a patent ductus be suspected, the tips of the sampling and injection catheters must be advanced into opposite branches of this artery.

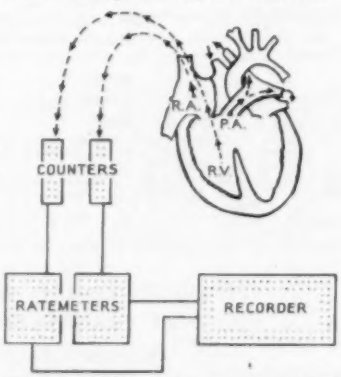


**Fig. 1—Schematic representation of the technique as applied in a case of ventricular septal defect. The radioactive tracer is injected into the pulmonary artery (PA) and travels via the lungs to the left heart. Some then passes across the defect and is detected in the right ventricle (RV) before the rest arrives by the normal circulation to the right atrium (RA).**

Suction then begins and the time taken for blood to reach each helix is noted—the "helix time". 0·8 ml. or less of a suspension of the patient's red cells labelled with 40 microcuries

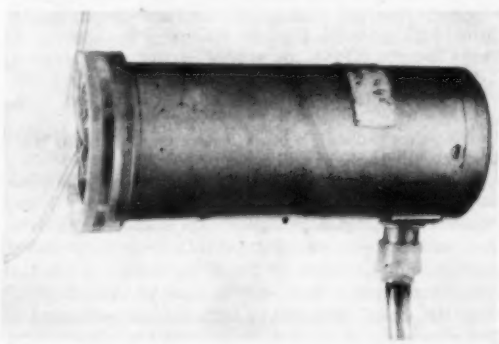

**Fig. 2—"End-window" Geiger counter with polyethylene tubing attached.**

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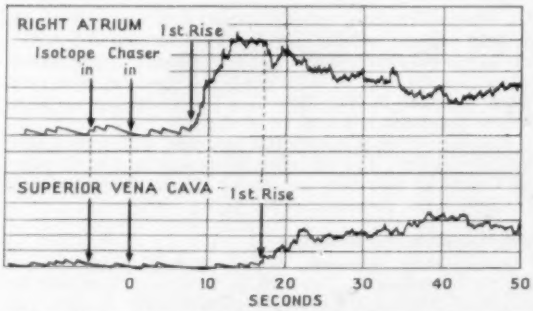


**Fig. 3—Simultaneous tracings from right atrium and superior vena cava after injection of $^{32}P$-labelled red cells into the pulmonary artery in a patient with an atrial septal defect.**

of $^{32}P$ is then rapidly injected into the injection catheter, immediately followed by a saline " chaser ". Suction is maintained until after the peak of arrival via the normal circulatory path has been recorded. A typical recording is shown in fig. 3. The helices are then disconnected from the sampling catheter and a solution of $^{32}P$ of known strength is drawn through them to calibrate the tracings. A solution of 0·008 microcuries $^{32}P$ (i.e., 40 microcuries in a 5-litre blood volume) gives a counting-rate of about 10 counts per second, over a background of about 0·5 counts per second. The integrating time-constant of the rate-meter used is 2 seconds. The counting-rate is rather low, and statistical fluctuations are therefore appreciable (15% R.M.S.) but the time of the $^{32}P$ appearance at the helix is sharply defined (fig. 3).

The limiting factors are, of course, the dose which may be given to the patient, and the necessity for keeping the sampling volume small. We have used doses of 40 microcuries $^{32}P$ which give a radiation dose of less than 0·25 rem in the first 24 hours; this value has been calculated from I.C.R.P. data.[7] The volume of the sampling helix is 0·3 ml. Higher counting-rates, and therefore smoother curves, could be achieved if a short-lived isotope were used so that the dose could be increased without increasing the radiation exposure. The obvious choice is $^{128}I$-labelled serum-albumen, which we have not used because of lack of technical facilities.

The red-cell suspension is coloured with Evans blue so that arrival in the systemic arteries can be recorded by an ear oximeter.

### INTERPRETATION OF RECORDINGS

The time-interval between the arrivals of indicator via the shunt and via the normal circulation can be read directly from the tracing (fig. 3) after correction for any difference in helix times, and affords definite evidence of a left-to-right shunt at a particular level. This interval is of the order of 10 to 15 seconds. When additional valvular incompetence is suspected, the simultaneous tracings should clarify the diagnosis, since the rates of rise of the curves should differ in shunt and regurgitant chambers. So far we have investigated only one such case without an opportunity to verify our localisation, since the patient declined operation.

The technique has been used on ten patients without apparent discomfort or risk. The suction exerted has not been observed to alter the extent of the shunt, since pressures and oxygen saturations were found to remain unchanged. The diagnosis has been confirmed at operation in all but two cases—the patient mentioned above and one in whom a clinical diagnosis of a high-resistance atrial septal defect was apparently confirmed by appearance of indicator in the right atrium 3 seconds after injection into the pulmonary artery. This patient subsequently proved to have primary pulmonary hypertension with both pulmonary and tricuspid valvular incompetence. This error might have been avoided by a simultaneous arterial tracing, which in incompetence tends to have a prolonged rise [8] and does not show the peaks of a shunt curve,[9] though this is not always definite.

The advantage of this technique over other methods lies in the simultaneous tracings from two right-heart chambers, which show a longer and more definite time-interval than is obtained by comparison with systemic arterial arrival-time. The procedure is complicated, but is valuable for selecting potentially operable cases when diagnosis by other means remains uncertain. We intend to study its potentialities further, especially in the problem of valvular incompetence and the possibilities of using shorter-lived isotopes.

Our thanks are due to Prof. J. Rotblat for his help and advice and to Dr. Geoffrey Bourne and Dr. G. W. Hayward for permission to study their patients.

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## Reviews of Books

### The Practice of Nuclear Medicine

W. H. BLAHD, M.D., chief, radioisotope service, Veterans Administration Center, Los Angeles; F. K. BAUER, M.D., chief, outpatient services, Los Angeles County Hospital; B. CASSEN, PH.D., chief, medical physics section, Atomic Energy Project, Los Angeles. Springfield, Ill: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1958. Pp. 407. 95*s*.

### Radioisotope Techniques in Clinical Research and Diagnosis

N. VEALL, B.SC., F.INST.P., research fellow, Guy's Hospital, London; H. VETTER, M.D., head, radioisotope laboratory, 2nd Medical University Clinic, Vienna. London: Butterworth. 1958. Pp. 417. 50*s*.

THE introduction of radioactive isotopes and reliable electronic equipment suitable for use by hospital technicians has expanded the application of isotopes in the investigation and treatment of disease; and this expansion is reflected in the many books that have appeared.

Dr. Blahd and his colleagues have written primarily to inform the practising doctor about the use of radioactive materials in clinical practice. Though the physical principles are described in the opening chapters, relatively little attention has been paid to technical aspects; but the difficulties and possible sources of error on the clinical side are more fully covered. Thus, in the description of the diagnosis of thyroid disorders with radioactive iodine, there is a useful list of commonly used substances and drugs which may invalidate the tests. On the other hand, there is no discussion of recent work on the technique of measuring thyroid uptake, and the suggested use of a scintillation counter without pulse analysis is now known to be one of the less satisfactory methods. No mention is made of $^{128}I$, an isotope of short half-life which gives a much smaller radiation dose to the thyroid. The book's scope is wide, but it contains some inaccuracies, and the approach, particularly on the laboratory side, is sometimes superficial.

The book by Mr. Veall and Dr. Vetter is remarkable for its firm grasp of the biological aspects of radioisotopes in clinical

investigation. Though only slightly over half the price of the first book, it gives a much more detailed and critical picture of the various techniques, and it analyses fully the sources of error and difficulties on both the physical and biological sides. Its approach to radiation hazards is sensible and rational, and useful information is included on the radiation exposure that may be expected from the various tests. The book can be strongly recommended as one of the best of its kind to all clinicians who want to use isotopes in the investigation of their patients.

### Neoplastic Disease at Various Sites

Vol. 2. *Tumours of the Bladder*. Editor: D. M. WALLACE, M.S., F.R.C.S., surgeon, St. Peter's, St. Paul's and St. Philip's Hospitals, London. General editor of series: D. W. SMITHERS, M.D., F.R.C.P., F.F.R. Edinburgh and London: E. & S. Livingstone. 1958. Pp. 352. 60*s*.

THIS volume gives a comprehensive review of modern opinion on the incidence, ætiology, treatment, and possible prophylaxis of bladder cancer. It is therefore of far wider interest than might be apparent from its title, and the list of contributors contains much talent drawn from varied specialties —industrial medicine, biochemical and cancer research, radiotherapy, and statistics, as well as urology. Statistically, cancer of the bladder vies with cancer of the lung in causing a growing number of deaths in the ageing population. Although certain industrial hazards have long been known, recent biochemical research indicates an extension of the risk and has suggested possible measures for its control.

The book discusses the value of cytological studies of the urine as a means of early diagnosis in factory workers; and an important section deals with the pathological classification of bladder tumours, emphasising the need to correlate the histological appearances with the clinical features as a guide to appropriate treatment and eventual prognosis. Various methods of treatment are described in detail, with particular reference to combinations of surgery and radiotherapy, and much new work is included. Perhaps the outstanding feature is the author's final analysis, in which the effects of different techniques are carefully compared in relation to the grading and staging of the tumours treated. This section (representing close study of over 1400 cases) gives a clear indication of the immense amount of new information available on this subject and establishes the book as an outstanding and up-to-date contribution to the study of cancer.

### Infectious Diseases of Children

SAUL KRUGMAN, M.D., assistant professor of pædiatrics, New York University College of Medicine; ROBERT WARD, M.D., professor and head of department of pædiatrics, University of Southern California. London: Henry Kimpton. 1958. Pp. 340. 75*s*.

INTENDED "to provide a concise and handy description of certain common infectious diseases of childhood", this book is arranged in alphabetical order, from adenovirus infections to whooping-cough, with two final chapters on the diagnosis of the acute exanthems and the control of communicable diseases. It is written primarily for an American audience and therefore covers some diseases which do not appear, or have not yet been recognised, in this country, such as Rocky Mountain spotted fever, rickettsial pox, and various arthropod-borne forms of encephalitis. The chapters on adenovirus infections, herpes simplex, and staphylococcal infections are excellent summaries of the present position, and some of the references are to papers published in 1958—a remarkable tribute to the publishers. The descriptions of other common infections are adequate though not full, and the complications are often dismissed rather briefly. Thus, the chapter on acute bacterial meningitis puts together a number of different infections, dealing briefly with diagnosis, treatment, and prognosis, and very few of the possible complications (for example, in meningococcal infection) are mentioned. Infantile gastroenteritis is not dealt with at all; nor is there anything about brucellosis or cat-scratch disease.

In the final chapter, on the control of communicable disease, Dr. Morris Greenberg strikes out in all directions. He would do away not only with isolation hospitals but also with masks and gowns and even with the "fever ambulance". The period of isolation for most of the infectious diseases has been very much shortened in New York City, and quarantine has been largely abandoned as a measure of control.

Although the book is very well produced, with some excellent illustrations, it is expensive, in view of its limited value as a work of reference, and seems to have been designed mainly as a text for examinations.

### Psychopathic Personalities

Prof. KURT SCHNEIDER, formerly director, psychiatric and neurological clinic, University of Heidelberg. Translated by M. W. HAMILTON, B.A. London: Cassell. 1958. Pp. 163. 18*s*.

IT has been a misfortune for psychiatrists in this country that until lately the outstanding work on psychopathic personality was a German study, never translated into English. Professor Schneider's thoughtful, systematic review of the problem and his description of the manifold types of psychopathic personality could, if widely known, have given more precision to this indispensable category than it has in fact acquired here: witness the report of the Royal Commission on the Law relating to Mental Illness and Mental Deficiency, with its dangerously flaccid grasp of the implications of this diagnostic term. Schneider sets psychopathic personality, of course, within the massive framework of German psychiatry, and gives it a wider meaning than has become current here or in America; but his presentation is fairly easily reconciled with the customary modes of classification and description which we employ. Henceforward, this standard work will be available to British readers, thanks to Miss Hamilton's painstaking and very readable translation. Comparison of random passages with the original reveal that she has ingeniously skirted or surmounted many obstacles, and has combined fidelity to the text with a modest firmness in tightening it up and making it read smoothly.

### A History of Medicine in South Africa

EDMUND H. BURROWS. Cape Town and Amsterdam: A. A. Balkema. Copies may be had from Paul Koston, 26, Tottenham Street, London, W.1. 1957. Pp. 389. 63*s*.

BREAKING new ground both medically and historically, this book traces from reliable records the growth of European medicine in South Africa up to the eve of the Boer War, and shows how it has influenced the country's development. The story begins with the troubles on the Dutch East India Company's ships which led to the formation in 1656 of a scurvy station and hospital at the Cape of Good Hope by Jan van Riebeeck, one of the company's surgeons. Sailing before the mast was a hazardous affair in those days, and the plight of vessels five months out from Holland was dreadful. A ship of 351 men approaching Cape Town contained 72 dead and 150 very ill with scurvy. They had been unable to get supplies on shore and were so weak they could not furl the sails. Could van Riebeeck help them with fruit and vegetables? The story includes Dr. James Berry, M.D. Edin., who on his death was found to be a woman, and the primitive medical arrangements in the early days of diamond digging when the hospital consisted of two daub-and-wattle huts near the racecourse, surrounded by gambling dens, hell houses, and saloon bars. The Great Trek also comes in to it, although medicine took little part in that vast human migration; and Dr. Starr Jameson, whose raid landed him in prison, but who later became premier of Cape Colony, is another figure. The book is well illustrated, well documented, and contains many short biographies, and it is a valuable source of information.

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**The Hospitals Year Book, 1959** (Institute of Hospital Administrators, 75, Portland Place, London, W.1. Pp. 1128. 57*s*. 6*d*.).—In his foreword Mr. J. F. Milne, the editor, says that no major changes have been made in this edition, but those who have been gratefully using past editions will think none the worse of it for that.

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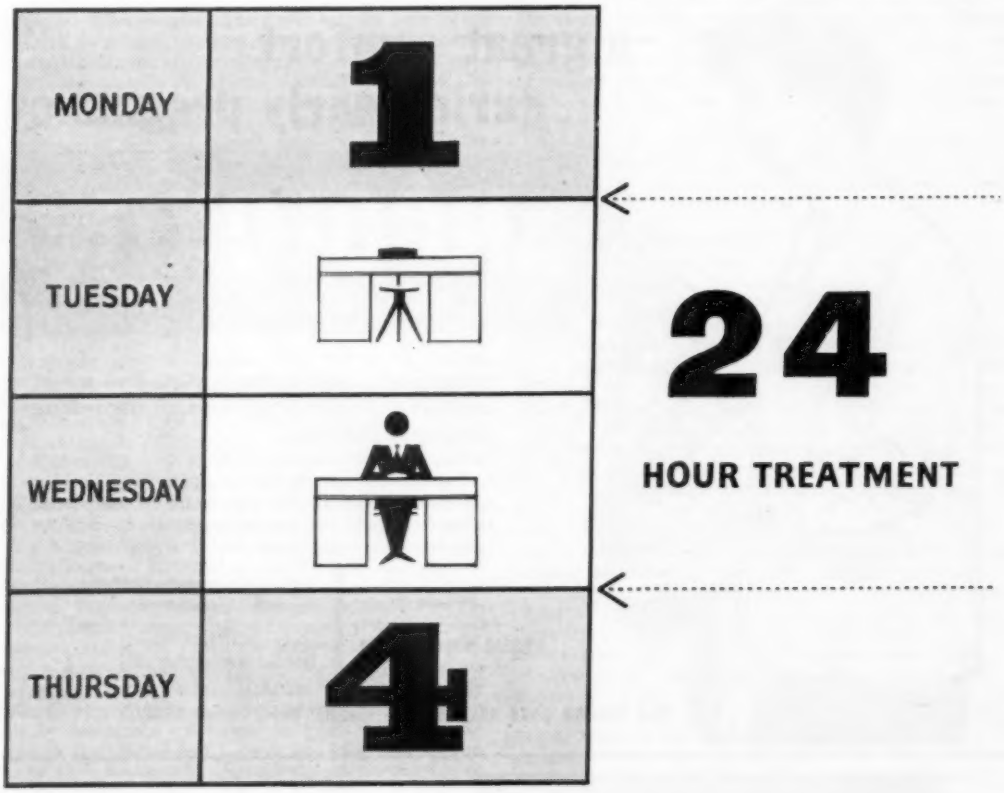


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- is well tolerated by children as well as adults
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THE LANCET

LONDON 27 DECEMBER 1958

## What Price Sterilisation?

DURING the past sixteen months an operational research team of the Nuffield Provincial Hospitals Trust has been investigating the sterilising arrangements in six different British hospitals, of which one was a London teaching hospital, three were provincial hospitals, and two were cottage hospitals. The team's report [1] is published now as a matter of urgency because the investigation revealed a state of affairs, both in wards and in operating-theatres, which made it seem wrong to hold up the information until—as was at first intended—present methods could be compared with the potentialities of central sterile supply departments.

A reading of the report prompts the conclusion that, just as war seems to be too dangerous a matter to be left to the generals, so sterilisation seems to be too much for many of those in whose care it now rather doubtfully rests. One real difficulty, which is possibly the greatest single cause of all the deficiencies described in the report, is that it is often hard to discover anyone who is really charged with, and has accepted, full responsibility for seeing that things regarded and accepted as sterile are truly free from living microorganisms. Of autoclaves, for example, the bacteriologist may say to his colleague the surgeon: "Does your autoclave sterilise?" What will be the surgeon's answer? Will he fell the questioner with a manly blow, as though the mere asking of such a question were an imputation on the virtue of his professional life—as indeed it is? The surgeon's reply will probably not be of this forthright character. Instead he will say that the autoclave *must* be all right because his theatre sister—an excellent and conscientious person—would not put contaminated instruments or dressings into his hands. (Indeed she would not knowingly do so). Likewise he feels certain that the autoclave must be doing quite well because he has no trouble in his wards. This is in fact what is conveyed to him by his ward sister, who does not care to upset him if this can be avoided. Accordingly the dangers and discomforts to patients represented by theatre infection of 5–10% of clean surgical wounds are quite likely to be covered up and played down; and these complications are allowed to pass as representing "no trouble"—so long as postoperative tetanus or gas-gangrene does not intrude. Happily and mercifully the odds against such self-revealing disasters seem to be almost inexplicably high.[2] Yet, as the Nuffield report now reveals, 36 of 209 allegedly sterile articles used in wards and theatres were unsterile—a contamination-rate of 17%. So surgeons cannot safely assume that all is well because their nursing sisters are manifestly conscientious and intelligent. The sisters, in turn, have to delegate responsibility to nurses and steriliser attendants, and many of these are either too junior or not sufficiently educated and trained to realise the full significance of what they are asked to undertake. Thus we read of clean and dirty duties being done in the same room; of dangerous methods of disposal of soiled linen and dressings; of dressing-drums with open parts lying where infected dust will reach them; of syringes being boiled for 50 seconds; of drums packed and loaded into sterilisers so that steam could not possibly penetrate the dressings; and of sterilisers operated in such a way that they were far more likely to kill their attendants than the organisms on the dressings. Any who have ever needed persuading that such mistakes as these happened only in the imagination of enthusiasts need only read the present report. There is no reason to suppose that any of the six hospitals investigated was exceptional. Most of these hospitals were suggested to the Nuffield team by their regional hospital boards, which would not be likely to propose such investigations at places where sterilising practice was known to be of a particularly low standard.

Having laid bare serious faults in sterilising practice, the report usefully discusses six ways in which immediate improvements may be introduced without great expenditure and without prejudicing changes in organisation that will be required by a long-term plan to guarantee efficient sterilisation in British hospitals—a plan which cannot be formulated without further information about the results of research now in progress. The six proposals may be summarised thus: (1) to improve the working of hospital autoclaves; (2) to introduce a substitute for the metal drums now generally used in British hospitals (there is a full description of a specially designed cardboard box which gave excellent results); (3) to improve the practices currently accepted for sterilising syringes; (4) to raise the standard of sterilising routines in general use; (5) to better the methods for the disposal of dirty dressings, linen, and bedpans; and (6) to define responsibility. Of these, the last is clearly the most important as well as the most difficult. The report may be commended for its suggestion that the responsibility for the supervision and control of the autoclaves should rest with the pathologist or bacteriologist. Most of these will themselves require a good deal of self-education before they can discharge this important duty for their clinical colleagues. In this report and in the publications which it cites they will find not only material for solemn reflection but also much enlightenment. We hope that further detailed studies and precise recommendations on the technology of sterilisation will shortly be available for the guidance of all concerned with this important matter.

1. Nuffield Provincial Hospitals Trust. Present Sterilizing Practice in Six Hospitals. Published by the Trust, Nuffield Lodge, Regent's Park, London, N.W.1. 1958. Pp. 75. 5s.

2. Lowbury, E. J. L., Lilly, H. A. *Brit. med. J.* Nov. 29, 1958, p. 1334.

## Anæmia in Pregnancy

PREGNANCY anæmia, like the poor, is always with us. Although the first monograph on the subject was written over a century ago, we are still not agreed about its frequency, its causes, and the best methods of preventing it. Two recent surveys have helped to crystallise our present ideas and have set out clearly much that is not generally appreciated though known to individual physicians. Dr. DAVID KERR and Sir STANLEY DAVIDSON,[1] in our issue of Sept. 6, were concerned with iron-deficiency anæmia in pregnancy; Dr. GILES and Dr. SHUTTLEWORTH, in our present issue, deal with the megaloblastic anæmia of pregnancy.

KERR and DAVIDSON studied groups of patients attending the antenatal clinic in four two-month periods —February-March and August-September of 1955 and 1956; information was available about a total of 1994 patients, 1071 of whom attended the clinic for the first time before the twelfth week of pregnancy. As a standard they took a hæmoglobin level of less than 12·6 g. per 100 ml. (85%) as indicating mild anæmia. Of the 1071 patients seen in the first eleven weeks of pregnancy, 32% had a hæmoglobin level below 85%, and in 2% the hæmoglobin was less than 10·4 g. (70%); of the 225 women first seen at the twenty-fourth week or later, 78·1% had a hæmoglobin level below 85%, and 13·7% had a level below 70%. This fall of hæmoglobin as pregnancy proceeds was brought out by following the changes in 440 patients observed during the second trimester who had not been given any iron; this showed that the fall was greatest in the patients who had the highest hæmoglobin at the beginning of the period; for example, in 66 patients with an initial hæmoglobin range of 95–99% the mean fall in hæmoglobin during the three months was 17%, whereas in 25 patients with an initial hæmoglobin of 75–79% the further fall was only 8%. The hæmoglobin levels tended to be lower in patients who first attended in the two months at the end of summer as compared with the winter months; this is the opposite of the seasonal variation reported by others, such as GATENBY and LILLIE,[2] and no obvious explanation is known. The occurrence of previous pregnancies seemed to have no influence on the incidence of anæmia. In 95 patients a detailed dietary survey was made in order to estimate their iron intake. In 1950 the British Medical Association's subcommittee on nutrition recommended a minimum of 15 mg. of iron daily for the pregnant woman; the average daily consumption of the Edinburgh group was 13 mg., but 26 of the 95 had less than 10 mg. The mean fall in hæmoglobin level of these 26 during the last three months of pregnancy was 4%, whereas the corresponding figure for the 69 who had more than 10 mg. iron was 2·7%. This was not a very striking difference; and KERR and DAVIDSON therefore concluded that iron was not the only factor in the diet controlling hæmoglobin level; but no other factor was implicated.

Nevertheless KERR and DAVIDSON thought that it was worth giving iron to all patients whose hæmoglobin was less than 85%. They used relatively small doses —105 mg. of iron daily either as ferrous sulphate or as ferrous gluconate—and they found that about three-quarters of the patients showed an increase in hæmoglobin; thus a group of 67 patients with a mean initial hæmoglobin of 81% who were treated with ferrous sulphate between the twenty-fourth and the thirty-seventh week showed a rise in hæmoglobin level to a mean of 86%. They found no significant difference between the two iron preparations, and the relatively few side actions were mostly due to psychological causes. About 25% of patients do not show any increase in hæmoglobin, and this was attributed to the masking effect of an unusually large increase of plasma-volume.

GILES and SHUTTLEWORTH's group was also large: they were able to study the incidence of megaloblastic anæmia among 3199 women delivered at two hospitals in Stoke-on-Trent between March 1, 1957, and May 31, 1958. The incidence of anæmia was high, and over 65% of women attending the antenatal clinics had a hæmoglobin below 80% (11·8 g. per 100 ml.). As not all cases could be investigated by sternal puncture, patients with hæmoglobin 65% (9·6 g. per 100 ml.) or less at the twenty-fourth week of pregnancy were selected; these patients were given iron by the most suitable route, and if, after the thirty-second week, the hæmoglobin level was still only 65%, a full investigation including marrow examination was carried out. But no less than a third of all patients delivered at these hospitals did not attend antenatal clinics and were first seen at the thirty-eighth week or as emergency admissions; all such patients were investigated if their hæmoglobin was below 65%. The patients who qualified for special investigation numbered 474 (14·8%), and 374 of them were late or emergency cases; 90 of these 474 proved to have megaloblastic anæmia, which was diagnosed before labour in two-thirds and after labour in a third. The total incidence of megaloblastic anæmia in the Stoke-on-Trent cases was thus 2·8%, or 1 in 39 hospital confinements. This incidence is much higher than any previously reported; thus FORSHAW et al.[3] studying 2700 confinements found 1 in 193, and COWAN[4] studying 1850 confinements found 1 in 206.

Several points of interest emerge from GILES and SHUTTLEWORTH's results. Thus in a third of the patients only "transitional" megaloblasts were seen in the marrow, and the presence of giant metamyelocytes was very helpful. 6 patients had normoblastic marrow between the twenty-ninth and thirty-third weeks, but their hæmoglobin level fell with iron treatment and subsequently megaloblasts were found. The hæmoglobin level was below 45% (6·6 g. per 100 ml.) in 65 patients, and 35 of these had megaloblastic anæmia; 8 patients had hæmoglobin less than 30% (5·0 g.), and 7 of these had megaloblastic anæmia. It is therefore important to recognise the frequency of megaloblastic anæmia as a cause of severe anæmia in pregnancy, and cases to be especially watched for are those in which the hæmo-

1. Kerr, D. N. S., Davidson, S. *Lancet*, Sept. 6, 1958, p. 483.
2. Gatenby, P. B. B., Lillie, E. W. *ibid.* 1959, i, 740.
3. Forshaw, J. W. B., Jones, A. T., Chisholm, W. N., McGouley, W. K. *J. Obstet. Gynæc., Brit. Emp.* 1957, **64**, 255.
4. Cowan, B. *Scot. med. J.* 1957, **2**, 433.

globin level is disproportionately low after a postpartum hæmorrhage. In 60 patients with megaloblastic anæmia test-meals were carried out, and achlorhydria was found in 26 (37%); these patients were followed for some time after labour, but addisonian pernicious anæmia developed in none. Steatorrhœa was sought in some patients, but suggestive evidence was rare. All the patients responded well and promptly to treatment with folic acid, but response to vitamin $B_{12}$ was poor.

GILES and SHUTTLEWORTH were much surprised by the high incidence of megaloblastic anæmia in their area, and tried to find the reasons for it. They found no seasonal variation in incidence, such as THOMPSON [5] has reported in Newcastle upon Tyne. The age-distribution was normal. There was evidence of increased incidence in multiparæ and in multiple pregnancy. Most cases arise in the thirty-third to fortieth week of pregnancy, and a sudden drop of hæmoglobin is often the presenting sign. Obstetric complications were not unusually common in the patients with megaloblastic anæmia; but investigation of the diet provided some suggestive results. A diet judged to be inadequate was taken by 42% of patients with megaloblastic anæmia, compared with 12% of patients with normoblastic anæmia. The greatest difference was in meat intake; only 35% of patients with megaloblastic anæmia ate three or more meat meals a week, compared with 80% of patients with normoblastic anæmia and 91% of healthy controls. Intake of fruit and vegetables seemed adequate; few women took less than 5 pints of milk a week; eating brown or white bread made no difference. These findings support the idea that megaloblastic anæmia of pregnancy is primarily a deficiency anæmia. Recent work has shown that folic acid and vitamin $B_{12}$ are transferred from the mother to the fœtus; BOGER et al.[6] showed that vitamin-$B_{12}$ levels in mother's blood decrease throughout pregnancy, and BAKER et al.[7] showed that at parturition the vitamin-$B_{12}$ and folic-acid levels in the serum are nearly always higher in the infant than in the mother—sometimes the difference is about fourfold. On the other hand GILES and SHUTTLEWORTH found that deficient diet cannot be the whole explanation, because megaloblastic anæmia develops in women who have had a good diet throughout pregnancy, while others who live mainly on bread and potatoes remain free of anæmia.

These two surveys reveal some surprising differences. In the Edinburgh survey only 2% of women attending in the first eleven weeks and 13·7% of those first attending in the twenty-fourth week or later had hæmoglobin levels lower than 70%; whereas in the Stoke-on-Trent group 65% had a hæmoglobin level of less than 80% when they were first seen. The Edinburgh survey does not deal with patients who came to the clinic only at the last moment or with emergency admissions, but no less than 72% of the severely anæmic patients in the Stoke-on-Trent survey were in this group. It is this late group that includes most of the patients with poor diet. The differences between the two surveys may therefore be due partly to social differences between the groups studied. KERR and DAVIDSON's groups were composed mainly of prudent Scotswomen, 53% of whom were attending antenatal clinics not later than the eleventh week, and it is perhaps not surprising that dietary deficiency was not thought to be very important. GILES and SHUTTLEWORTH, however, were studying groups of whom 72% had neglected to make timely arrangements, such as attending early at antenatal clinics.

Both surveys raise the question of the desirability of routine antianæmic treatment in pregnancy. The case for administering iron to the pregnant woman has been advanced by many and now seems proved. The only questions to be settled are the dose and the preparation to be adopted. KERR and DAVIDSON administered small doses—no more than 105 mg. elemental iron daily—an amount provided by two 0·2 g. (gr. 3) ferrous-sulphate tablets or three 0·3 g. (gr. 5) ferrous-gluconate tablets. Many investigations have now made it clear that, in this sort of dosage, no other preparations have an advantage, and ferrous sulphate is so much cheaper than other forms of iron that it should normally be used. DAVIDSON and RICHMOND [8] calculated that, if ferrous sulphate were substituted for ferrous gluconate or ferrous succinate in hospital and family practice, the saving to the N.H.S. in Scotland alone would be about £40,000 a year. Other preparations should rarely be needed; and it is worth pointing out that, at present prices in hospital, the cost of giving 105 mg. iron daily for a week varies, from a farthing for ferrous sulphate to 3*s.* 3*d.* for some proprietary preparations. Whether folic acid should be given routinely seems more debatable; LOWENSTEIN et al.[9] gave it to all women during the last three months of pregnancy, a routine which they found effective; and folic acid is not expensive. On the other hand there is the danger of folic acid covering up important diagnostic signs, and there is the admittedly rare risk of treating a case of addisonian pernicious anæmia this way. It seems far better to investigate properly all patients with severe anæmia; but, if facilities are lacking, patients with severe anæmia in the last trimester of pregnancy who do not respond to iron should be given folic acid. Vitamin $B_{12}$ and intramuscular liver preparations are of no avail in the pregnancy anæmia of temperate zones.

## The Private Bed

LATELY there has been a sharp increase in the charge for private beds in National Health Service hospitals. The amount of this increase has varied from hospital to hospital, but in some it has been as much as £12 per week. Thus in a small specialist hospital in London the charge has risen from £26 to £38 a week; in a big non-teaching hospital in London from £25 to £35; and in a small country town in Suffolk from £14 to £19. The reason for the sudden rise is neither, it seems, a change of policy nor higher expenditure: it is simply a change in

5. Thompson, R. B. *Lancet*, 1957, i, 1171.
6. Boger, W. P., Wright, L. D., Beck, G. D., Bayne, G. M. *Proc. Soc. exp. Biol., N.Y.* 1956, **92**, 140.
7. Baker, H., Ziffer, H., Pasher, I., Sobotka, H. *Brit. med. J.* 1958, i, 978.
8. Davidson, S., Richmond, J. *Lancet*, Sept. 13, 1958, p. 570.
9. Lowenstein, L., Pick, C., Philpott, N. *Amer. J. Obstet. Gynec.* 1955, **70**, 1309.

the method of calculating the cost of inpatients. Hitherto, in making this calculation, the cost of the outpatient department has been subtracted from that of the hospital as a whole, on the notional basis that five outpatient attendances cost the same as one inpatient day. But the introduction of departmental costing has shown that in fact the cost of outpatients is less, and the cost of inpatients therefore relatively more. Since private beds in hospitals were authorised in 1946 on the understanding that the patients using them would meet the full cost and would be no charge on the taxpayer, the present changes may be held to rectify an error. But their effect must certainly be to reduce the demand for private treatment in hospital.

There is, of course, much disagreement about this kind of accommodation. Some people think that medical care should be exactly the same for everybody; and they are certainly right when they say that the pressure for improving the general wards of our hospitals would increase faster if there were no alternative open to the wealthier, more critical, and more influential sections of the public. Some people, again, are opposed to private beds because they hold that priority of treatment should never depend on willingness to pay; and this again is a reasonable argument. Though, in the National Health Service, speedy admission is arranged for anybody held to be in urgent need of attention—for instance, those with malignant disease—there are often long delays in the treatment of disorders such as hernia and prolapse which, though not acute, interfere seriously with efficiency. Whereas the wage-earner with a hernia is usually placed on a very long waiting-list, the man of means, who may be far less disabled by it, can have prompt attention in a private bed; and the advantage of this immediate attention will often go well beyond the mere comfort or convenience on which anybody should be able to spend his money if he likes.

But the National Health Service was not set up to deprive any part of the community of the good medical care they previously enjoyed; its object was on the contrary to extend such care to people who previously lacked it. So long as N.H.S. patients have to wait for proper (i.e., speedy) treatment of their hernias, which the well-to-do can readily get, that object is not attained. But the remedy here should be positive not negative—to make sure that everybody can have necessary treatment without harmful delay whether he can pay or not. What is needed is improvement of the public service, not interference with the private one—the abolition not of private beds but of the waiting-lists which too often make private treatment medically advantageous. Private practice seems to us both legitimate and worth preserving for its own sake; but no patient should have to go to a consultant privately because he cannot otherwise get a bed within a reasonable time. To those who point out that private consultants have a vested interest in waiting-lists, the most convincing answer would be a concerted effort by the consultants of each region or group to rearrange their work, and its priorities, so that the important arrears are overtaken. Has enough attention been paid, for example, to suggestions that special teams should be organised in each region to work off the lists of untreated hernias? That might or might not be the best way of removing this particular standing reproach on the health service [1]; but we can scarcely doubt that, if this were wartime and the rapid treatment of the waiting patients were thought nationally desirable, some suitable means for achieving it would very soon be found.

If medically harmful waiting were abolished, would there still be a demand for private beds? Yes; for various reasons. The most obvious is that only as a private patient can one be sure of privacy. Though, in the National Health Service, a patient's wish for privacy is more and more regarded as a medical ground for providing it, there are seldom enough side-rooms to satisfy the true demand, which is often silent. Admittedly many people who are prepared to pay for privacy would be happier—and safer, too, when they are really ill—in a small ward rather than in single seclusion; but they may not think so. Moreover there are some busy people who want to go on attending to their affairs, and need a room where they can get on with their paper work and telephoning. But even if privacy and business facilities were provided by the National Health Service (at a small charge where appropriate), there would still be one desideratum that no service can be expected to guarantee—namely, attention from a particular doctor. Most people do not mind about this: the name of the hospital inspires sufficient confidence: "I leave it to you, doctor." But there are others who, knowing perhaps that a particular surgeon operated successfully on their friend, or that a particular physician is an authority on the disease, are very anxious to secure that doctor's help for their wife or child, or for themselves. Sometimes the actual advantage will be less than they suppose; but only a very rigid ideology would try to prevent their purchasing it if they want it.

Since this demand exists and will continue, the question to be decided is whether it is to be met by hospital pay-beds or only by nursing-homes. Our own view is that there must never be any question of money buying medical privileges *within* the National Health Service, and that pay-beds attached to N.H.S. hospitals ought to be regarded as something quite separate from the service, for which the patients must therefore pay the full cost. But so long as they are willing to do this, there is surely no good reason against letting them use hospital pay-beds, most of which were given specifically for this purpose. To deny private patients their long-established access to hospitals would not abolish the demand for private treatment but would certainly diminish its efficiency. Who would benefit from a return to more nursing-homes, unable to give the specialised care which difficult cases now so often need? Hardly anybody. Certainly not the many patients from Commonwealth countries and from the Middle East who have been in the habit of coming to this country for investigation and treatment.

1. For an account of an alternative scheme, tried in Birmingham, see *Lancet*, 1954, ii, 855.

Is it possible to preserve both pay-beds and the principle that they are outside the N.H.S. and must therefore cost it nothing? Only, perhaps, by a fresh approach to the problem. Though an increasing proportion of the potential users are partially covered by such insurance schemes as those of the London Association for Hospital Services and the British United Provident Association, the recent increases in charges are bound to speed the process by which pay-beds are being priced out of existence. Yet, in so far as they cater for paying patients who would otherwise have to be treated free of charge, pay-beds are financially useful to the service; and, if there are many such patients, it might be profitable to the service to treat them as a business proposition. The cost of each pay-bed is something that can be calculated in various ways, and the highest figure is not necessarily either the most sensible or the most just. One possible way of reducing the charges would be to average them out over all hospitals: another would be to make allowance for services not ordinarily used by private patients—e.g., the almoners. Maybe such possibilities were fully considered before the recent increases were allowed to take their "natural" course; but maybe not. What would be particularly welcome would be a firm decision on pay-beds which would be acceptable to all political parties and would remain in force for some years whatever Government was in power. If such agreement is in fact impossible, this is, we fear, because in the past few years too many people, waiting long months for treatment, have been allowed to feel that they are medically underprivileged—because they have seen private patients getting not only amenities but medical priority for their money.

## Annotations

### WESSEX REGIONAL HOSPITAL BOARD

THE Minister of Health has announced [1] the area which is to become the charge of this new board on April 1.[2] The official description of the board's ambit is:

"The administrative counties of Dorset (except the part included in the South-Western Regional Hospital Area), Isle of Wight and Southampton (except the part included in the South-West Metropolitan Regional Hospital Area). The county boroughs of Bournemouth, Portsmouth and Southampton. So much of the administrative county of Wilts as comprises the boroughs of New Sarum and Wilton; and the rural districts of Amesbury, Mere and Tisbury, and Salisbury and Wilton".

The parts of Hampshire which will remain under the South West Metropolitan Regional Hospital Board are:

The borough of Aldershot, the urban districts of Fleet and Farnborough, the parishes of Yately, Hawley, Crookham Village and part of Crondall in the rural district of Hartley Wintney, and part of the parish of Bramshott in the rural district of Petersfield.

### MISLEADING SENSITIVITY TESTS

ONE of the commonest investigations in the hospital bacteriology laboratory, and possibly the one of greatest immediate interest to the clinician, is the antibiotic-sensitivity testing of bacteria. In its simplest and most popular form, the test is performed by placing antibiotic-containing tablets or paper discs on an agar plate uniformly inoculated with the organism to be tested, and examining the plate after incubation for zones of growth-inhibition around discs of antibiotics to which the organism is sensitive. In some laboratories several discs containing different concentrations are used for each antibiotic, and this method can give an indication of the degree of sensitivity which correlates remarkably well with the more accurate but much more time-consuming tube-dilution method.[3] Generally in this country only one strength of each antibiotic is used, corresponding to the blood level attained—or the urinary level when urinary-tract pathogens are tested. A method employing only a single concentration is less well controlled than one which uses several, but in practice the value of any method depends on the accuracy with which the concentration of antibiotic in the disc or tablet is stated.

It is disturbing, therefore, to read in a recent paper by Sleigh [4] "that penicillin tablets of a brand widely used in this country are totally unreliable and that their use may lead to errors in reporting penicillin sensitivity". He found that penicillin tablets from different batches of this brand, instead of containing the labelled dose of 0·5 units per tablet, contained a range of concentrations from 0·11 to 4·3 units. Deterioration during storage—the usual explanation when tablets are found to be under strength—cannot account for a concentration over 8 times too high; and it would appear that the manufacturer is neither controlling the dose of penicillin put into his tablets nor assaying the final product with anything like the degree of precision which is essential. Another occasional error in sensitivity testing with antibiotic tablets results from fermentation of the lactose base by certain organisms. This has been known to cause non-specific inhibition of growth of a second organism in a mixed culture.[5]

Inaccurate sensitivity-testing discs have been reported in Canada by Greenberg et al.[6], who found that discs of four different brands covering a range of ten antibiotics contained antibiotic in amounts which differed widely from those stated on the labels. So unsatisfactory was the situation that the authorities decided to control antibiotic discs under the provisions of the Canadian Food and Drugs Act. Every batch of discs is now officially tested, and those which vary by more than 40% from the labelled strength are rejected for sale.[7] The United States Food and Drug Administration is taking steps to ensure the accuracy of discs sold in the U.S.A.

We hope that Sleigh's findings will encourage both users and manufacturers of British antibiotic tablets and discs not to accept them as uncritically as in the past. If a more complete survey shows them equally unsatisfactory, improvement will be required either through the manufacturers' own efforts or by regulation.

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THE Rockefeller Foundation has made a grant of £10,000 to the Royal College of Physicians of London for use towards the general expenses of the Association for the Study of Medical Education during its first five years.

1. S.I. 1958, no. 2093.
2. See *Lancet*, 1958, i, 1321.
3. Collins, A. M., Craig, G., Zaiman, E., Roy, T. E. *Canad. J. publ. Hlth*, 1954, **45**, 430.
4. Sleigh, J. D. *Scot. med. J.* 1958, **3**, 454.
5. Waterworth, P. M. *J. med. Lab. Tech.* 1958, **15**, 245.
6. Greenberg, L., Fitzpatrick, K. M., Branch, A. *Canad. med. Ass. J.* 1957, **76**, 194.
7. Greenberg, L., Fitzpatrick, K. M. *ibid.* 1958, **79**, 383.

## Before Our Time

### IS HISTORY "BUNK"? *

WILLIAM DOOLIN
Hon. M.B. N.U.I., Litt.D., F.R.C.S.I., Hon. F.R.C.S.

MY title has been set in the form of a question: *Is* History "bunk"? In its assertive or aphoristic form the statement was originally attributed to Mr. Henry Ford, founder of the great motoring industry at Detroit, during the sittings of the Peace Conference at Versailles at the end of the war that was to end all wars. As such, it may be taken as the verdict of the unlettered mechanic, the "man who works with his hands". Down to the middle of the 18th century that same reproach of relative illiteracy had been cast at our forerunners who practised surgery by the physicians as they sat in sublime and inefficient ascendancy over their humbler brethren—the barber-surgeons.

As one who has followed the humbler craft for forty years I cannot blame Mr. Ford for his mistaken assessment of historical values; rather do I sympathise with him as the victim of an indifferent education in his apparent failure to realise that he himself, all unknowing, was one of the founders of an epoch in the history of modern transport.

But that a literate Frenchman (and a historian to boot), M. Fustel de Coulanges, should have placed on record his opinion that *l'Histoire ne sert à rien* is to me inexplicable: just as Mr. Henry Adams' sweeping assertion that "in its essence incoherent and immoral, history has to be taught as such—or falsified" reads to me as the impatient reaction of a Harvard professor who could see no virtue in the arguments of his political opponents. Within more recent years we have had reason to welcome the appearance of the academic or research historians—men such as Arnold Toynbee [1] and Herbert Butterfield,[2] who have been at pains to distinguish the dangers and pitfalls which beset the student of "official" history.

However, it is not for me to quarrel with Messrs. Ford et al. for their lack of faith. I am no professional historian. In an older Gaelic civilisation there flourished the craft of the *seanachie*—the loose-footed, wandering man who loved a good story and took pleasure in telling it in convivial company where, suitably encouraged, he delighted to point the moral as he adorned his tale. It is just such a good story that I should like to relate now; the tale needs no adornment, and its moral, I hope, will become clear as I proceed.

* * *

Many of you, I feel sure, will remember Kipling's jingle:

> I had six trusty serving men
> (They taught me all I knew).
> Their names were What? and Why? and When?
> And How? and Where? and Who?

That verse, I have often thought, was an embellishment of the first Napoleon's advice to the members of his staff, as related by his biographer, Bourrienne: "La plus utile des questions, messieurs, c'est Pourquoi?"

The dominant factor in the history of human endeavour down through the centuries has been the force of the *idea*: it is the idea which invariably has given rise to the facts and to the developments which later ensued from its enunciation. Who thought of it first, and why? When did the idea come to him, under what circumstances and where? and how did the idea work out? The main attraction I have found in reading biography or history has been the search for the birth of an idea, its growth and its ultimate development—which "ultimate", I would remind you, may take a long time to arrive.

One has, of course, to select one's sources carefully. A witty American visitor, looking over my bookshelves one evening after dinner, turned to me, book in hand, with a pleasant smile: "You know, doctor, there are biographies and autobiographies; but this is an ought-not-to be-ography," with which verdict I thoroughly agreed.

* * *

Let me give you an example of the search for the idea.

Galen, the Asiatic Greek, had come from Pergamos to practise in Rome towards the close of the 2nd century A.D. γαληνός means the quiet man; our Galen was "anything else but": he was the only active research experimentalist in ancient history. In Rome, anatomising on pigs and dogs—dissection of the human body being prohibited by Imperial decree—he demonstrated the beating of the live heart. This he and his pupils believed to be a two-chambered pump, regarding the auricles as part of the great veins. The pulsation which they could feel at neck and wrist they thought must be pneumatic, due to the πνεῦμα or airy spirit, within the arteries, driven onwards with each beat of the heart.[3] Yet, as surgeon in charge of the gladiators in the Colosseum, Galen had observed that when an artery was severed *no air rushed out*, and he recorded the fact. He and all who accepted his teaching believed that the blood flowed within the living body in tides, "to and fro, as the sea in the straits of Euripes". And such was his posthumous authority that for nearly fifteen centuries after his death every sentence he had written was regarded as the pronouncement of an infallible sage. Even Harvey referred to him as *divinus ille vir*.

The study of human anatomy, forbidden by Greek and Roman, began in the universities of Northern Italy during the 13th century. Leonardo, the Florentine, we know, had dissected many bodies and, in support of Galen, professed his belief that the blood passed from right to left ventricle through "invisible pores" in the septum. Vesalius, iconoclast and reformer, whose *De Humani Corporis Fabrica* (1543) was one of the wonders of the Renaissance, could not find these pores, yet hesitated to question Galen's accuracy. Fabricius, his successor to the chair at Padua, first saw and named the valves (*osteoli*) in the veins (1574), yet never realised their purpose. To Padua came (1600) "honest little Harvey", to whom these valves afforded the first clue [4] to his slow realisation that the living blood flowed not to-and-fro in tidal waves but, "as it were, in a circle".

Vesalius, Fabricius, Harvey—these are names which are the glory of the Paduan school, but Harvey's physical "circle" was not closed until Malpighi at Bologna had demonstrated the capillaries in the lung (1660), within them the blood corpuscles, which he compared to "fat globules like a rosary of red coral" (1665).

Well might John Locke, the Scots physician and philosopher, declare that "Truth scarce ever carried it by vote on its first observation": Harvey and Malpighi suffered

* Address delivered at the opening session of the Faculty of Medicine, University of Sheffield, on Oct. 10, 1958.

1. Toynbee, A. Civilization on Trial. London, 1948.
2. Butterfield, H. History and Human Relations. London, 1951.
3. Singer, C. The Evolution of Anatomy. London, 1925. Some 500 years before Galen, Psaxagoras of Cos found the arteries empty after death and deduced that they contained air (ἀήρ, τέρω).
4. Lord Cohen of Birkenhead (*J. Hist. Med.* 1957, **12**, 2) cites Osler's statement that Boyle had related that "in the only conversation he ever had with Harvey he acknowledged that a study of the valves of the veins led him to the discovery of the circulation of the blood".

cruelly from the contumelious opposition of their colleagues for their departure from the pure Galenic gospel, while poor Lavoisier, whose discovery of oxygen (1775) revealed to us the Why? of the circulation, went to the guillotine in the early days of a French Revolution "which had no need of savants".

We live forwards, but understand backwards; in that long stretch of years from Vesalius through Harvey to Lavoisier no man had foreseen the next step. It had taken nearly two and a half centuries (1543–1775) to demonstrate the basic fact of the circulation. "In the mountains," said Goethe, "you may travel from peak to peak, but for that you need very long legs."

When did Harvey get the idea of the circulation? He nowhere tells us, beyond stating that he had been teaching it in his anatomy classes in London for nine years before he ventured to present it for public appreciation. He, too, had hesitated to face the disapproval of his colleagues from Oxford and Cambridge, conjoint Galen-worshippers with the Paris from which their schools had sprung. Today, we look back upon Harvey's method of experimental confirmation of observed fact as having converted medicine from an observational art into a scientific discipline.

* * *

But why should I recall for you the thrice-told tale of the discovery of the circulation, which doubtless you have already heard from your teachers of anatomy and physiology? My reason is simple: I want to "debunk" Mr. Ford and all those of his type. (He has not a few followers—pragmatical gentlemen all—within our own profession. Foremost in my mind is the desire to emphasise the need—never more necessary than at the present time—for a more general liberal education, as distinct from the narrowly technical, for the boy or girl who is going to be a doctor in our future society. At high table in an Oxford college last May, when discussing this particular theme, I was assured: "My dear man, our public schools have given up teaching what used to be known as Eng. Lit." If that statement be true, as my informant clearly believed it to be, more's the shame for them!

When I was a postgraduate student in Berlin before the first world war, Waldeyer, the Grand Old Man of German anatomy, used to invite some of his students to share a Sunday walk with him. On one such *Ausflug*, I ventured to ask him: "Which type, Professor, do you think makes the best doctor—the student who comes to the university from a *Technische Hochschule*, or the one who has had a good grounding in the Humanities?" Without hesitation the old man replied: "Give me the student who has done his Humaniora, every time. The knowledge of literature—and in that I include history—makes its possessor a wiser man; it is *the* most necessary quality for the doctor in practice." Since then, forty years of teaching have taught me this: that it is relatively easy to become a competent specialist, but it is much more difficult to become a good doctor—and it takes much longer!

Two years ago, when delivering the first Arthur Hall memorial lecture in this university, Sir Francis Walshe reminded his audience that there are in Medicine certain ethical and humanistic elements, largely conceived in the medieval universities, which he believed to be in danger of being lost in our present-day universities and colleges. He went on from that to describe the present tendency of medical teaching to be

> approaching ever more closely to the idea of the polytechnic, and to be developing an intellectual climate not wholly favourable to that generality of understanding which is the essence of a civilised culture.

Was ever a reproach—and a serious one—more delicately uttered?

With his strong sense of history Sir Francis reminds us of the bequest that has come down to us from these medieval universities of Bologna and Padua, bidding us to take pride in our ancestry. The true worth of that intellectual heritage has been by none more clearly, more concisely, defined than by Newman in his lectures on the *Idea of a University* delivered in Dublin when he first came to us from Littlemore (1853):

> . . . A university education is the great ordinary means to a great, but not ordinary, end . . . It is the education which gives a man a clear, conscious view of his own opinions and judgments, a truth in developing, an eloquence in expressing and a force in urging them.

In no faculty in any college or university, as I see it, does Newman's idea of a university education apply more closely than in a faculty of medicine. And none working within that faculty will have benefited more from its practical teaching than the pupil destined for the front-line trenches of our profession—the family doctor. In his assessment of the significance of his patient's symptoms (diagnosis), in estimating the course to be taken for his patient's cure (therapy), and the prospects for his later recovery (prognosis), surely the doctor's clinical judgment, his clarity of explanation, and his power of conviction in advising his patient as to the course to follow—all will have gained an added authority from the quality of the cultural no less than the technical education which he will have received during his formative years. Such attributes thus acquired will enrich every aspect of the student's professional life in days to come, whether he be physician or surgeon, research-worker, or clinical teacher.

* * *

To those of our pragmatical brethren who ask: "But what *use* is medical history in practice?" we must reply that a knowledge of the story of his profession is part of the education of every cultivated individual; that medical history is a storehouse of lessons for the future because of the light it sheds upon events that have happened, their causes and consequences; that human beings are the stuff of which history is made, hence the doctor who has to deal with human beings must study their reactions to life around them so that he may learn their causes and interpret their significance. Only thus can he hope to take the proper measures to remedy their consequences. Should that line of persuasion make no appeal to them, we may fall back on the statement of Sir Walter Scott that "a lawyer without literature or history is a mechanic, a mere working mason; if he possesses some knowledge of these, he may venture to call himself an architect".

In the simplest words, history is the story of the past told in the present for the future. It deals with a continuum of events in time—a continuous chain of development and understanding.. This sense of the continuity of human action in time gives us the historical basis for the study of medicine: to some, indeed, it is the story of medicine itself.

Implicit in our translation of the Latin word *utilitas* is the development of judgment: and history, as Galdston [5] correctly pleads, is that discipline which "exposes and expounds the bases upon which our judgment can best be founded".

* * *

5. Galdston, I. The Utility of Medical History. New York, 1957.

Harvey's idea, however, had been only the prologue. With Lavoisier's discovery of oxygen we come to what Herbert Butterfield has called the Saga of the Scientific Revolution.[6] The seeds of that revolution had been sown by Harvey's contemporaries at Padua—Copernicus and Galileo. Our scene now passes for a while to Paris, so reluctant at first to accept Harvey's departure from Galenic orthodoxy. With Richelieu's foundation of the Académies (1625) in Paris and that of the Royal Society by charter of Charles II in London, new discoveries in physics and chemistry came pouring in from all sides, till Claude Bernard [7] revealed to men the secrets of the portal system (1848–50). Now men began to ask what the circulation had to carry, and why and how and where it took up its loads, and why and how and where it discharged them. Till the answers to these questions had been forthcoming, Magendie, Bernard's teacher, had contemptuously dismissed the practice of medicine as *une science entièrement à faire*. Within another few years the primary, unseen causes of disease were revealed by the greatest Frenchman in history, Louis Pasteur, before whom, cried Osler, "all was Egyptian darkness; after him was light".

Pasteur—who was neither physician nor surgeon—liberated both from the Egyptian darkness which through centuries had befogged their every effort to dispel the foul miasma of infection from their hospital wards. Lister's first public announcement of the antiseptic principle in surgery, based upon Pasteur's discoveries, was delivered to a meeting of the British Medical Association held in the great hall of our present University College, Dublin, in 1867. He, too, had to run the gauntlet of his colleagues' stubborn incredulity, as had Harvey and Malpighi in their day.

Today we are the grateful witnesses of the fruits of Lister's application of Pasteur's genius not merely in our operating-theatres but in our medical wards and our laboratories, from which have come, as in a torrent, the triumphs of experimental medicine. Without Listerian asepsis, the enormous advancement of the frontiers of medicine, recently summarised by Professor Stuart-Harris [8] in a manner which I could not hope to emulate, could never have taken place in such swift succession. Day by day, in the physiological and biochemical laboratories of three continents, men have laboured to assist their clinical brethren in obeying Harvey's injunction that they should "seek out the secrets of Nature by experiment" for the benefit of humanity. The achievements which have been born of the daydreams of a young English graduate as he wandered through the Val d'Arno on the road from Padua to Venice [9] constitute a story which "abideth everywhere wrought into the stuff of other men's lives". Is not the story of such a continuum of human activity a sufficient answer to the pragmatical gentlemen who see no reason for medical history in a university education?

* * *

All human history is made up of progression and regression—it is a tale of successes and failures. I have touched only upon the major successes, in a series of chamois leaps from one Alpine peak to the next. The dark valleys beneath are filled with the near-misses and the failures; such are the casualties of every phase of human endeavour.

If, as he very properly did, Sir Francis Walshe bade you take pride in your ancestry, may I venture to suggest that there is room for a little humility, too? In this age of "violent accomplishment" on which Dr. Stuart-Harris has warned you younger members you are about to enter, let you not cease to remember that the one sin the High Gods never forgave was that of ὕβρις. Think on the story of Icarus—the oldest legend of them all—and of the fate that befell him. We may use our knowledge freely, if we pay for it humbly, on our knees. The Spanish peasant has a saying: "'Take what you want,' says the Lord. 'Take it—and pay for it!'" That is the doctrine of Free Will. We—or rather you—may, with further increase in knowledge, use the products of the broken atom for the benefit of humanity; but not to destroy mankind utterly, nor for the insane and prideful flight Icarus attempted, into the face of the sun.

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## Special Articles

### CHILDREN AS DAY PATIENTS

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DURING the past few years one of the two pædiatric inpatient units in Oxford has been used for the observation, investigation, and treatment of children as day patients. The scheme has evolved gradually to meet a need in the pædiatric service.

Clinics have been established for day patients in several other specialties, but most of these have been used either to allow mental patients to attend each day for treatment while keeping in touch with home and the world outside (Harris 1957), or for regular but less frequent attendance of geriatric patients (Cosin 1954). At our inpatient unit the child comes to hospital with his mother and she stays with him for the day. One attendance is usually enough for assessment and to allow us to make plans for the future; only occasionally are repeated visits arranged for treatment.

#### FACILITIES

If the possibility of accepting day patients were considered when building plans were laid, a first-class unit could be devised to meet all the purposes of a modern pædiatric department. Nevertheless it has been found that no outlay was necessary to run this scheme on a small scale in a pre-existing inpatient unit.

*The Hospital*

The one-storey children's block that we use can take 34 children as inpatients. It was built, for other purposes, in the grounds of a general hospital (the Churchill) and converted immediately after the late war at a time when both building and equipment were difficult. Though far from ideal, it has many advantages both for inpatients and for a day hospital. The open site with its asphalt and grass playground allows space and freedom for the children out of doors, and the wide corridor running the length of the block is popular when they must remain inside. Part of one of the two-bedded wards can usually be spared for a day patient, so as to allow parents to stay with a baby or with a child who needs sedation for some

investigation. A covered way connects the wards with a schoolroom and mothers' quarters, and these buildings are borrowed once a week for a small outpatient clinic.

*The Staff*

More important than the building is the staff. The sister must be not only an efficient nurse but also a friendly, unruffled person, fond of teaching and ready to help the parents. The pædiatric registrar and house-physician on duty on the ward take part in the investigation of the children.

*Other Facilities*

All the facilities of the general hospital, including radiology, speech therapy, occupational therapy, and the department of physical medicine, are available to help in assessment and in planning any course of treatment.

*The Patients*

Most of the children accepted as day patients have first been seen as outpatients in the city or at an outlying clinic and have been sent because it did not seem possible to come to a wise decision on their problems without further observation and investigation. A few who have been inpatients or seen on domiciliary visits have been sent for assessment. Infants are referred from a follow-up clinic run in connection with the neonatal department.

## GENERAL PLAN

The pædiatrician concerned is officially on the ward twice a week—once for a teaching round, and once to hold a ward round in the morning and an outpatient clinic there in the afternoon. There are seldom more than 2 or 3 day patients at a session, and appointments are arranged so that the students can see those likely to be of special interest to them. At the end of the afternoon parents can come across to the outpatient clinic and discuss any problem with the consultant before taking their child home.

Babies are usually brought to the department in time for a feed at about 10 A.M.; toddlers and older children may come a little later and join the inpatients on the ward. Apart from any specific investigation or treatment, it is useful to watch the child at meals and as he runs about with the others. In this way special points in his behaviour, mental development, gait, and speech can be studied and we can notice his relationship with his mother. The father may come too on this rather special occasion.

## TYPE OF CASE

In retrospect it is useful to see the type of problem that has been studied, the observations, investigations, and treatment that have been carried out, and to recognise the children who have benefited most from their visits as day patients.

*Small Babies*

*The infant who fails to thrive* is often an anxiety: one is loth to admit him and yet examination in outpatients may be unrewarding. As a day patient he can be watched at several feeds and we can catch a fresh specimen of urine or obtain blood for analysis. Other investigations, such as a barium meal or electrocardiogram, can be arranged on the same day.

*The small baby with suspected fits or delay in development* may need lumbar puncture, a fresh specimen of urine, blood for toxoplasmosis tests, &c., and examination of the fundi after dilatation of the pupils, as well as a clinical examination which can be made when the baby has settled down.

*Older Infants and Young Children*

*For feeding problems* full examination and any necessary investigations are combined with an opportunity of watching the child at dinner and tea and of helping the parents with encouragement and advice. The mother who writes "my husband and I would be happier if her throat were X-rayed" is seldom completely satisfied by another outpatient examination, but may be reassured (without the help of radiology) after one or more days with her child on the ward.

*Where there is delay in reaching milestones* preliminary observation of hearing, sight, speech, behaviour, gait, and manual dexterity all help in assessment. Various types of toys and walking aids can be tried in the ward and advice given as to what would be most useful at home. Where delay is found to be due to spasticity or myopathy, the parents can be introduced to the other departments for their care. The child psychiatrist now works in an adjacent hospital, and plans have already been made to integrate the two departments more closely; it will be possible to have the benefit of his opinion at the same visit for some children.

*Grossly defective children* of any age should be investigated even when we have little hope of helping them. Not only can we collect data that may be valuable in classifying these tragic cases, and perhaps lead ultimately to prevention or treatment, but the parents are undoubtedly helped by knowing that this study has been made.

*In enuresis* when a child is damp by day or some other point in the history raises the possibility of an underlying abnormality, investigation as a day patient may be a useful screening test. In addition to the routine examination of the child, micturition can be observed, and the presence of residual urine detected. Blood-urea, electrolytes, and in some cases a pyelogram or cystogram, are among the investigations that can be carried out at the same visit.

*For follow-up assessment* children who have been inpatients and who live far from hospital can usefully be seen as day patients. For example, a child with diabetes mellitus can be watched throughout the day while urine and blood-sugar are checked and the opportunity taken to remind the mother of the important points in the care of the diabetic child. An annual visit near each birthday may be used to consider his progress from all points of view.

## ADVANTAGES AND DISADVANTAGES

The attendance of the child as a day patient with his mother allows us to assess him more thoroughly than is possible in an outpatient clinic and yet avoid admitting him as an inpatient. The disadvantages of admission for little children have lately been discussed again by Illingworth (1958). These difficulties cannot altogether be eliminated, even when the mother is admitted with her child as advocated by Spence (1947) and MacCarthy (1958), and there must also be some disruption of home life for those left behind. Attendance as a day patient causes little interference in the family doctor's care of the child and can be provided at less expense to the community.

It would be difficult to see day patients on a conventional children's ward with its lack of space and more orthodox atmosphere. These children undoubtedly interrupt ward routine, particularly for the medical staff, and cause extra work for the sister out of proportion to their numbers. Theoretically day patients might bring infection into the ward, but in practice this has not happened, and the risk should be very small if histories are taken with care. A genuine difficulty lies in the possibility of temporarily mislaying notes or neglecting to send prompt reports on these children who come to the department through an unusual channel; but, once this is appreciated, such mishaps should be avoidable.

My thanks are due to Sister M. M. Leach for her invaluable help and to all those house-physicians and pædiatric registrars who have taken part.

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## Points of View

# PROGRESSIVE NON-CONFORMISM IN THE LATERAL GENICULATE NUCLEUS OF MAN

### A Problem in Competence

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"For as soon as labor is distributed each man has a particular and exclusive sphere from which he cannot escape if he does not want to lose his means of livelihood."—KARL MARX.

WITH the advancing phylogenetic development of the vertebrate brain a progression of specialisation has been the unavoidable concomitant. Proceeding from the single receptor cell of the amœba, through the simple undercorticated brain of the lower primates, to the vast and multifunctional cerebrum of man, a continuum of specialisation becomes the distinction of advance within the species.*

Thus while the brain of the ant weighs a mere 0·0128 g.,[5] that of the red termite already has reached 0·0215 g.[6] This has been shown to represent a 65% increase in mental functioning, which is in good accordance with the higher complexity of the termite society. Thus Federndorf et al.[6] have been able to evaluate statistically two representative societies—that of the blue-black Southern Rhodesian ant (*Scurrilus rodex*), and that of the Southern Californian red or crawler termite (*Scralex scurrilæ*). After excluding all superfluous and inconsistent data, they were able to demonstrate that the termite society is 63·8% more complex than that of the black ant. The significant interdependence between these two sets of data is not only obvious, but was also proven statistically.

When considering the human, the acquisition of more complex reactions, and the establishment of long lines of interpersonal relationships, necessitate an intricate differentiation of the neuronal functions.

Thus each neuron, instead of acting as both receptor and effector, not merely restricts itself to one of these two types of activities but also limits itself as to the range of stimuli which can be taken up. Thus in turning to the visual system we find that in the retina Neuron no. 18197 A † is susceptible to only the red colour of 7124·4 Angstrom units, ignoring all other stimuli with the superciliousness of one who is certain that handling an impulse outside its special field would not only be degrading but might even represent a step towards becoming the left tentacle of a sea-anemone.

Yet, at the present time, this is not the real problem. For whilst each nerve-cell had a particular, even though highly specialised function, everything went smoothly, and cerebral functioning was at its highest possible efficiency.‡ However, in the course of the past twenty years, a strange and very disturbing phenomenon has come to pass. It is that of the non-conforming non-functioning nerve-cell, or what we will call, from lack of a better name, the non-conforming neuron.

#### THE NON-CONFORMING NEURON

The evidence for this phenomenon is best seen when examining the optic system. Here we find that in 1937—that is, a short time after the blossoming of non-conformism—there were 568,845 cells in the lateral geniculate body of man.[1] This is compared to 564,766 nerve fibres in the optic nerve,[2] meaning that while 564,766 nerve-cells were each performing their specialised duty of transmission of light impulses to the visual cortex, 4079 cells were not functioning in this capacity. In what capacity were they then acting? Exhaustive work on the lateral geniculate body by Le Gros Clark [10] and Magoun and Ranson,[11] has shown that there is no other path of departure from the lateral geniculate body than that of the optic tract. Therefore if these 4079 cells are not giving off any axons into the optic tract, they are not giving off any fibres at all; or, to put it bluntly, they are non-functioning neurons. That these neurons are living, and taking oxygen and glucose supplies is quite evident from the vital-stain studies of Darkschewitsch [4]; so we have 4079 parasitic non-conforming neurons in the lateral geniculate body alone. Space prevents a thorough examination of other cerebral areas, but the almost negligible effects of prefrontal lobotomy as so well evidenced by Freeman and Watts,[7] would lead one to suspect the situation to be widespread, rather than a phenomenon limited to the optic system.

Yet in 1937 the situation was still tolerable. Latest studies, however, have shown an increase in the population of the lateral geniculate body to 1,018,190.[3] This has not been accompanied by any improvement of vision among members of the human race, but rather is the result of an inexorable application of Parkinson's law.[12] This, in brief, states that if three men perform a job inadequately, in due time six men will perform the same job with equal inadequacy. But not only has the population of the lateral geniculate body doubled over the past twenty years, but the number of unemployed neurons has also risen. Thus at the latest count there are 8190 parasitic neurons in the lateral geniculate body.[3]

#### RE-EDUCATION OR DESPECIALISATION?

It does not take much imagination to reconstruct how non-conformism has come about. It is the ultimate result of specialisation. One neuron, who at first was forced to handle all stimuli in the red frequency (to take any arbitrary example), gradually specialised himself down to a range of 10 Å, and then further to 1 Å, and even further to 0·1 Å. The number of stimuli impinging on the neuron decreased with each specialisation, so that at the end, realising its superfluousness, and the ability of the body to do without a receptor of a stimulus of 7120·8 Å wavelength, the neuron rolled up its dendrites and its axon sheath, and became non-functioning. It continued to receive a glucose and oxygen supply, and would become

* In sending us this paper, Dr. Menkes wrote:
"I was already outlining my paper with the view of having it published in your magazine, when it occurred to me that there are certain prerequisites expected of an American paper prior to publication in a British journal. These of course include a certain style, avoidance of any two syllable word, when a four or five syllable word can be found, a good background of statistics, adequately spaced references to psychiatric literature, and other like professorialisms. These I have included, so as not to disappoint any future readers from the British Empire."—ED.L.

† See Erich von Hofbauer's enumeration in his *Brief Handbook of the Retina* (vol. 26).

‡ See R. Browning:

"The lark's on the wing
The snail's on the thorn
God's in his heaven
All's right with the world."

terribly upset at any vascular insufficiency; but on the whole it would only *act* as if it were functioning.

In its leisure time it contributed to the dendritic potential (confusing all electroencephalographers), increased and decreased its sodium and potassium permeability every few minutes or so, and played a charming host to all cholinesterase molecules within its cellular membrane.

This situation is, to say the least, extremely alarming. We are witnessing the establishment of a trend that will ultimately lead to complete cessation of neuronal activities. This undoubtedly would have a not inconsiderable effect on all human activities.

Now, although the problem can be stated quite succinctly, its solution is still a matter for much conjecture. As Hughlings Jackson so aptly put it: "A dead neuron is a useless neuron." [8] The converse is of course equally true. Whether or not the path for reintegration of these non-conforming neurons lies in the direction of re-education, with intense emphasis on the individual and his role in his community, or whether despecialisation—a return to the primitive receptor system—will ultimately prove to be the answer, we are in no position to state. In any case more basic research on this subject is of utmost urgency.

However, once the danger has been delineated, the first step towards its rectification has been taken, and one can only agree with Osler's famous dictum "Know thyself" as the prime basis for further scientific progress.


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## Public Health

### The Third Quarter

THE Registrar General's quarterly return for England and Wales in the September quarter, 1958,[1] show that accidental deaths numbered 3550—an increase of 146 over the figure for the corresponding quarter of 1957. Deaths due to accidents in the home decreased, but deaths from transport and other accidents increased. Accidents in the home caused 1234 deaths—44 fewer than in the September quarter of 1957. There were, however, 114 deaths from coal-gas poisoning compared with 68 in the September quarter of 1957. Deaths from transport accidents numbered 1508—86 more than in the same quarter of 1957. Pedestrians killed numbered 467 (122 were under 15 years of age and 217 were 65 years or over); this was 41 more than in the September quarter of 1957. Pedal-cyclists killed number 185 (61 were under 15). Deaths from other accidents totalled 808—an increase of 104 over the figure for the September quarter of 1957. Deaths from drowning numbered 311, compared with 201 in the same quarter of 1957.

1. The Registrar General's Quarterly Return, no. 439. H.M. Stationery Office. Pp. 22. 2s.

## In England Now

*A Running Commentary by Peripatetic Correspondents*

"YOU know, it's time you wrote something," my chief said as he left on 14 days' study leave to attend a surgical conference in the French wine country, leaving a legacy of 2 extra clinics and 4 operating sessions. As he hadn't told me how to find the time to follow his advice, I took my problem to a wise senior registrar (6th year vintage). He offered me the following useful working rules:

Single case-reports should not be eschewed despite condemnation by superiors as the "lowest form of medical literature" (reference to their own publications will often reveal "A case of enlarged spleen" or the like, penned in the early '30s).

Three cases of an uncommon condition are better written up separately and submitted to different journals, on the theory that chances of publication increase in proportion to the number of attempts submitted.

To increase the number of publications cited in application forms one paper may be split into two parts—say Pathology and Treatment—and published as two consecutive papers in the same journal. Where there are two authors it is a good plan to switch round the names for the second paper.

The title should be general and comprehensive with the true facts in a small-print subtitle (e.g., ACUTE APPENDICITIS—Description of a Case). This confuses appointment committees who visualise a mammoth treatise and are too busy rushing between committee-rooms and nursing-homes to read it.

Photographs are almost obligatory. It doesn't matter what they show—there is a vogue at the moment for 'Technicolor' which gives an excellent vista of green towels.

Block graphs impress, though they may chase some readers to the next article on the assumption that this must be "biochemical stuff" and, therefore, beyond them. They are probably right.

The length of the paper is a matter of personal choice and has no relation to content—e.g., great length can be achieved without extra work by including complete copies of case-notes, though the only relevant parts are recapitulated under the heading "Discussion".

"Review of the literature" and "references" are synonymous terms and need cause no extra work. They are easily copied from any other recent publication on the subject. They should always be listed as symbols of authority and diligence, but not necessarily read. Many will be in Swedish.

Thanks should be recorded to as many people as possible, not forgetting the gate-porter, without whose aid one could not get into the hospital to see the cases in the first place—and the paper is complete.

The title of my first? VARIATIONS IN FACIAL MORPHOLOGY—a case of Tongue in the Cheek.

* * *

We were still innocent of clinical medicine. In a few weeks we would leave the university and scatter through the teaching hospitals. At present we were listening (I think some of us were listening) to our lecturer in pharmacology. She was a cultivated woman, a refugee, and an enthusiast; and at this moment she was discussing digitalis. Her discussion became, we suspected, reminiscence as she attempted to convey to us the dramatic change in heart-sounds before and after an attack of acute left ventricular failure. The message proved difficult to get across: few of us had used a stethoscope. "Ach! How can I explain! You see," she said, "it is like a key-change in Schubert!"

Scientific? Perhaps not: but she held an entranced audience for the rest of term. And not a few of us will carry this definition in our minds and our hearts long after the significance of gallop rhythm and the mechanism of pulsus alternans has been finally settled.

* * *

When it comes to repelling boarders, the landladies of our small seaside town have the Navy licked. Their secret weapon is their décor. My Merit Award goes unhesitatingly to a hostess I know whose front hall is heavy with ginger varnish and bleak with standing orders and objurgatory notices directed at holiday-makers in general and that untouchable caste known as "sleepers" in particular. (This last group of wretches is turned out of the establishment as soon as they get out of bed, and are not readmitted until 10 P.M.; they are worse off

than Noah's dove who found no rest for the sole of her foot, because on that occasion it had at least stopped raining.)

On the staircase (parish-hall brown) are rebukes for would-be switchers-on of lights after 10.30 P.M., and castigations for those inconsiderate enough to fall noisily downstairs in the dark. The smallest room of all has a reminder that "Others Wish to Use This Place as Well", and a pencilled footnote asking, "As well as what?" Bedroom placards deal with such topics as noise, strong drink, mealtimes, dogs, smoking, and fire.

Any unoccupied wall-space is devoted to art. Apoplectic huntsmen, red cardinals, and flamboyant sunsets cause the public rooms, like the dust in Tennyson's *Maud*, to "blossom in purple and red". Upstairs at 18*s*. 6*d*. b. & b., you get as the big picture, Napoleon on board the *Bellerophon*, supported by the mixed infants class (1898) at the local board school; while 25*s*. b. & b. earns you the double-feature programme of *Greenwich Pensioners at the Tomb of Nelson* and *Spring in the Engadine*. Elsewhere there are a variety of action pictures, typically showing lancers introducing unappreciative fuzzy-wuzzies to the *Pax Britannica*, and portrayals of sanguinary doings on the North-west Frontier. The mortality among kilted warriors suggests that England was fighting to the last Scotsman.

It was from this boarding-house that in the days of rationing the hungry and indignant boarders marched in protest to the town hall, each carrying on a plate the landlady's idea of an adequate breakfast. At the tail of the procession came an artist. He carried a picture from his bedroom.

* * *

Germany, Northolt, the bank manager, the insurance people, a haircut if possible, Northolt, Germany—that was my tight schedule for the day.

"No appointment, sir? I'm afraid you'll have to wait quarter of an hour." I thumbed the current *Punch* for thirty seconds. An elderly courteous assistant asked if I was receiving attention. If I merely wanted a haircut without trimmings he was just the man to do it in the four and a half minutes before his next booked appointment. I accepted and was ushered to a chair next to an expensive tycoon, who was being manicured by a lady who obviously knew her business and his. It was indeed a rapid and efficient haircut done with a light-hearted inconsequential commentary—how fortunate I was to have found him unengaged, the only assistant in the establishment who combined speed with efficiency. It was a pleasure to have a customer who knew that no haircut worth the calling need take more than five minutes, and so on. I was up and the clothes-brush was being applied with the deft touch of the expert when Mr. Tycoon said: "He's right you know, he's the best in the business—cuts Mr. Walfson's hair—he won't have nobody else touch it." "I'm not surprised," I said, "but now of course he has a greater claim to fame—he's cut my hair." Not a smile, just a momentary scanning by Mr. Tycoon and the lady attendant. "But, sir, we don't know who you are." "Don't worry," I said, "I don't know Mr. Walfson." Why was it that Piccadilly and Regent Street looked a slightly different colour and that bank and insurance managers assumed proper proportion as I stepped into the tube for Northolt?

* * *

DEAR SIR,

I feel despondent
For your roving correspondent
And his verses on uroscopy last week.[1]
Without being too pedantic,
They're enough to drive one frantic
And force the most retiring chap to speak.

Now I'm no academician,
Still less a great clinician,
A pretty meagre scholar for my part;
But I take a strong aversion
To his ignorant assertion
That cystoscopy is not a visual art.

ARGUS

1. See *Lancet*, Dec. 13, 1958, p. 1283.

# Letters to the Editor

## INSULIN COMA FOR SCHIZOPHRENIA

SIR,—In recent years *The Lancet* has published a series of articles often critical of the value of the insulin-coma treatment of schizophrenia vis-a-vis other treatments [1–4] and recently I was asked by the Sakel Foundation to give a paper in New York on Insulin-coma Treatment in England. I thought it might be worth while, therefore, trying to find out, by written inquiry, how far the *Lancet* articles, current clinical findings, and the advent of the tranquillisers had affected the use of insulin-coma treatment in England at the present time.

Of 64 mental hospitals and neurosis centres in the southern part of England, which have all used insulin coma in the past ten years, it turned out that only 9 had given it up recently, and then for a variety of reasons. One superintendent of a mental hospital, for instance, felt that group therapy could be as good as insulin. Others pleaded staff shortage, or lack of patients. 6 of these hospitals mentioned the advent of the tranquillisers as contributing to a decision to stop the use of insulin coma permanently or temporarily. The remaining 55 mental hospitals were, however, still using insulin in varying amounts. 21 of them reported no change at all in the amount of insulin coma given since the introduction of the new tranquillisers. 34 more, however, replied that the tranquillisers had reduced the amount of insulin coma needed, in some hospitals by as much as 80%.

As a known advocate of insulin-coma treatment, my own findings are of considerable interest. In the years 1951–55, 42 patients with schizophrenia were admitted to the psychiatric inpatient unit at St. Thomas's Hospital either for investigation or treatment. 27 of these had insulin coma in varying amounts, and 14 of the 42 patients had to be transferred either to observation wards or mental hospitals. Since the advent of the tranquillisers, however, the whole overall picture does seem to have changed. It has been possible to admit more cases of schizophrenia than previously, and get them well more speedily. In fact, of another 44 patients with schizophrenia, who have all been admitted since 1956 and who have mostly been given chlorpromazine in varying amounts of up to 1000 mg. a day, only 5 patients seemed to need insulin coma. The rest did much better than was expected, mostly by combining chlorpromazine and electroconvulsion therapy, and only using modified insulin to restore normal physique. Also, only 2 of these last 44 patients, as opposed to 14 of the first series of 42, needed transfer to observation wards or mental hospitals. There does, therefore, seem to be some evidence that tranquillisers may be altering the present need for insulin coma, especially when used in combination with E.C.T. and modified insulin. Such patients must subsequently be maintained on tranquillisers, however, after discharge, or else they tend to relapse within a month of stopping them, and we do not yet know how long maintenance doses will have to be continued.

The variety of opinions expressed by competent clinicians, and the differing findings of this inquiry, suggest that we should not be too dogmatic yet about the respective place that all these treatments will occupy in the future. And certainly no treatment should be given

1. Bourne, H. *Lancet*, 1953, ii, 964.
2. Boardman, R. H., Lomas, J., Markowe, M. *ibid*. 1956, ii, 487.
3. Ackner, B., Harris, A., Oldham, A. J. *ibid*. 1957, i, 607.
4. Leyton, S. R. *ibid*. 1958, i, 1253.

up entirely which can help to save any single patient from thirty years of chronicity in the back wards of a mental hospital. Doctors attending the Sakel Foundation meeting, which included many internationally known workers, were practically all in favour of retaining insulin coma as one of the treatments of early schizophrenia; and only recently I have again seen 2 patients who had not responded very well to tranquillisers and E.C.T. who seem to be doing better after insulin coma.

Department of Psychological Medicine, St. Thomas's Hospital, London, S.E.1. WILLIAM SARGANT.

## MEDICAL EMIGRATION

SIR,—I have followed this correspondence with considerable personal interest. I began my medical training over fourteen years ago, and since then have taken 3 degrees and 2 diplomas, and held 10 different posts in hospitals or in the university. But I am still a long way from finding permanent employment.

In contrast I spent one year in postgraduate studies with students from overseas, and since then I have had letters from them telling me of their progress. One has taken charge of the pathology department at a large native hospital in South Africa. Another has joined a flourishing private pathology practice in Australia, and become a visiting consultant at his local hospital. Another has become second-in-command of a university pathology centre in the United States. And so on . . .

I will shortly face a period of unemployment, which I hope will not last long. But who can blame us for looking overseas?

JUNIOR PATHOLOGIST.

## IN THE DOLDRUMS

SIR,—Reading Junior Ophthalmologist's letter of Dec. 13, I felt that some additional comment could be made on other specialties. In psychiatry, for example, it is possible rapidly to reach the grade of senior registrar on the strength of an M.R.C.P., and without a D.P.M. In fact it seems to be official policy in some places to encourage this.

It may be that there are those working in this specialty who have little real confidence in it—and seek thus to bolster up its medical respectability.

But this diffidence can topple over into injustice when it means that a man will be employed for a long period doing the work of a senior registrar, but being accorded neither the status nor the money which should go with it.

In certain instances the primary F.R.C.S. may, like the M.R.C.P. be largely irrelevant to the matter in hand, and passing it under present-day conditions may require multiple attempts, even for the competent, and a capacity to learn the appropriate gimmicks.

It is little wonder, then, that things are in the doldrums; and Junior Ophthalmologist may be right in suggesting that the autocratic structure of the profession has much to do with this sorry state of affairs. It is, perhaps, a measure of the seriousness of the problem that he did not feel able to sign his name.

London, S.W.5. W. H. ALLCHIN.

## THE HOMELESS AND THE COMPANIONLESS

SIR,—Dr. Andrews (Dec. 13) touches on a most important point when he suggests bringing together elderly people who are without homes and friends. Some of your readers will be aware of the very excellent work done by the Councils of Social Service in Exeter and Plymouth in finding accommodation in private houses for a number of old people. Other voluntary organisations are following their example and there is at least one local authority which is doing similar work.

The National Corporation for the Care of Old People will, in the New Year, be publishing a report of the two schemes in Exeter and Plymouth which will emphasise the importance of careful matching of those who are to spend their lives together in future. Neither of these two schemes have confined themselves to housing discharged hospital patients—though they have included them—and both work very closely with the hospitals, the local authorities, and the National Assistance Board.

National Corporation for the Care of Old People, Regent's Park, London, N.W.1. M. R. F. SIMSON Secretary.

## BANTING UP TO DATE

SIR,—In answer to Major Hamilton's letter of Dec. 6, I must say that the essence of the argument I put forward was, indeed, based on observation, and not at all on "mysticism". This observation is the very simple one that all living organisms are very accurately adapted to their natural environment. This is, and always has been, obvious, and has called forth other explanations than Darwin's. Paley in his *Evidences* considered that this adaptation was a proof of a divine creation, and it was Darwin, who knew Paley's work, who gave an alternative explanation—the struggle for existence. Clearly, Darwin's view does not envisage any adaptation in an organism to a relatively new factor in the environment without an adequate period of *time*, so that the necessary number of generations and natural selections can take place.

If the natural law of adaptation, mentioned in my letter of Nov. 22, is at all times assessed in relation to this time factor, it will never be found fallacious. It will, on the contrary, be found to be of supreme value in estimating the possible danger of any given factor in our environment today, and he who disregards it will do so at his peril.

Madrid. T. L. CLEAVE.

## DANGERS OF "CHEAP" CORTISONE TABLETS

SIR,—During the past week we have admitted to hospital two patients with Cushing's syndrome who have undergone bilateral adrenalectomy. They have hitherto been well controlled on cortisone, and without exposure to infection or other stress both had developed signs and symptoms of adrenal insufficiency. Anorexia, nausea, excessive tiredness, lethargy, and inability to keep warm occurred while on maintenance doses of 50 mg. of cortisone.

Inquiry showed that both these patients had recently received cortisone tablets from a new batch. These tablets were bought by the hospital pharmacy through the Teaching Hospitals Contracting Committee at a price approximately 40% less than the normal hospital price. They are manufactured in this country from material originating from the Continent. The tablets are slightly larger than those hitherto purchased and patients have noticed that they do not break up so readily in the mouth. Samples submitted before the contract was placed complied fully with all the tests of the *British Pharmacopœia*, but subsequent investigation of batches which have proved unsatisfactory were found to have a disintegration time longer than the *B.P.* requirements.

Adrenalectomised patients and those with Addison's disease are dependent upon cortisone replacement for their wellbeing, and indeed for their continued existence. The

circulation of "substandard" cortisone tablets constitutes a hazard of the greatest magnitude to such patients.

We know that these tablets have been purchased by other hospitals and feel that physicians should be aware of their existence since they may be the cause of unexpected adrenal insufficiency in their patients.

Medical Unit,
University College Hospital Medical School,
London, W.C.1.

M. L. ROSENHEIM
E. J. ROSS.

## PLASMA-CALCIUM IN PRIMARY HYPERPARATHYROIDISM

SIR,—In connection with the paper by Dr. Lloyd and Dr. Rose (Dec. 13) on ionised-calcium determination in the diagnosis of hyperparathyroidism, I am wondering what the objection is to estimating the cerebrospinal-fluid calcium, which surely is almost entirely the diffusible fraction and, since the complexed fraction forms such a small proportion of this and apparently does not significantly alter in hyperparathyroidism, would be much simpler to determine.

Group Laboratory,
St. Peter's Hospital,
Chertsey, Surrey.

C. F. ROSS.

## A SEARCH REWARDED

SIR,—In your issue of Feb. 15 you published an annotation on the R.A.M.C. Historical Museum, which ended with the pious hope that "Any reader lighting on a disused horse-drawn heavy ambulance-wagon in his garage is invited to offer it to the museum". The search may now be called off!

Having combed the various dumps and vehicle stores throughout the kingdom with the help of our friends in the R.A.S.C. and R.A.O.C. with no result, we had almost given up hope when a local contractor, living barely half a mile away, told us that he had purchased such a vehicle at a sale of Army stores in 1922; it had been put to a variety of domestic purposes during the last thirty-six years but still bore the load table and red crosses. Mr. Cranstone has generously presented it to the museum.

**Horse-drawn ambulance wagon used in 1914-18 war.**

Its war record is obscure. It is certainly not the 1911 vintage which many of us remember in use in 1914, but tallies almost exactly with the variety used in the South African war as described in the R.A.M.C. Manual of 1908. It is quite possible, therefore, that it is an old South African veteran again pressed into the service for the Kaiser's War. Refurbished and repainted it now stands before our museum.

R.A.M.C. Historical Museum,
Queen Elizabeth Barracks,
Crookham, Hants.

R. E. BARNSLEY.

## BREAST CANCER

SIR,—The contentions raised in the recent contributions on this subject are helpful. Before the advent of radiotherapy there was little argument in the disadvantages of a radical mastectomy, for at that stage it was the one chance. When radiotherapy became feasible it was welcomed as an added form of attack, and for some years now the issue has been on how far it should replace surgery. But when a breast obviously contains invasive material—and it is obvious the condition is advanced, whatever the clinical findings—is management to be wholly standardised and committed to one routine or varied according to the patient? Is there to be no distinction between the old and the young, the thin and the obese, the dark and the fair, the tough and the not so tough? I am still, I am afraid, unconvinced of any finality in the balance between surgery and radiotherapy.

The operation of mastectomy, whether simple or radical, is a mutilation. There is also a risk of performing the worst form of biopsy by dividing invasive tissue at the level of the axilla or at the first rib interspace. Alternatively eradication may be complete. Radiotherapy is less certain in its eradication, though it affords greater coverage, and however skilled the administration may leave a feeling of fatigue as a temporary or more often a permanent complaint. It may, too, initiate gross obstruction to the lymphatic drainage of the arm, but a certain penalty is unavoidable if life is to be prolonged. Statistics do not tell the whole story, and I feel they are more use as a guide than a directive.

A final question. Are we for ever committed to the word cancer? A word that haunts and does not help. A change from a very old interpretation of this disease seems overdue.

London, W.1.

F. D. SANER.

## ANASTOMOSIS IN THE CORONARY CIRCULATION

SIR,—We note with interest that in your issue of Nov. 29 Dr. Pepler confirms our finding that a large proportion of the Bantu possess coronary anastomoses of functional significance.

We should like to comment on certain points in Dr. Pepler's letter.

(1) We did not overlook the possibility that our findings relate only to the Bantu; the original title of our paper was Coronary Anastomosis in the Bantu. We accepted the new title since we agreed that probably our findings were of general application; we do not consider the techniques of "the pioneers" in this field to be as satisfactory as ours in demonstrating anastomoses. Remote though the possibility is that the differences we reported are racial we naturally took steps to investigate this; this work continues and a report will follow.

(2) Dr. Pepler is wrong in assuming that he can speak for a significant proportion of other South African pathologists when he challenges our finding that the Bantu do suffer commonly from coronary heart-disease. There is a paper at present in press (Laurie, Woods, and Roach) in which we prove this statement and quote material checked independently by six other histopathologists.

(3) Brink's conclusions [1] have not been substantiated, and for this reason we did not quote him. From a small series of 33 cases, Brink claimed that the majority of the Bantu possess a left coronary circulation very different from that of the European and suggested this as a possible cause of the differences in the incidence of frank coronary occlusion. Elliott [2] was the first to question this conclusion; and later Singer, the anatomist, showed in a series (not yet published) ten times bigger than

1. Brink, A. J. *Clin. Proc.* 1949, **8**, 137.
2. Elliott, G. A. *Leech*, 1953, **23**, 25.

that of Brink that there were no racial differences in the left coronary circulation.

It is remarkable with what tenacity the view is held that the Almighty has cast the Bantu in a mould different from all mankind. This view is unlikely to appeal to the serious worker.

Public Health Commission, Perth, Western Australia. W. LAURIE

Department of Cardiology, University of Alberta, Edmonton, Canada. J. D. WOODS.

## HOW MANY OF US SHOULD THERE BE?

SIR,—Dr. Ffrangcon Roberts (Dec. 13) has, I think, done his short-term arithmetic quite correctly. But his long-term picture is faulty. He has failed to allow for the ultimate bulge in the Harlow death-rate, which must occur thirty or forty years from now. Moreover, the Development Corporation has left space for old people's bungalows, against the time when these will be needed, to release bigger houses for the new families. Again, he has neglected the natural movement of population; in all communities, something like 4% of homes are vacated each year. One way or another, Harlow's children's children should be able to find the homes they need, if they want to stay in Harlow.

By italicising and dwelling on the words "sending away" (despite the fact that this had been specifically rejected by the Development Corporation), Dr. Ffrangcon Roberts has created a chimæra. He might care instead to turn his attention to those communities around London, built between the wars, where children are already having to go elsewhere because no space was left for the next generation's homes. Because the Harlow Development Corporation is leaving 4000–5000 homes to be filled by natural increase, we face the future with reasonable confidence.

All the same, I still hope Harlow may continue to retain a net reproduction-rate of over 1. For four years we have had in Harlow excellent birth-control clinics run by the Family Planning Association. Nevertheless, Harlow families continue to grow. Can it be that the parents actually think life in a new town is worth living, and a large family the best basis for family happiness? I hope so. If, as again I hope, some of the young people of Harlow in due course decide to strike out for themselves in new places in Britain or overseas, they will take with them memories of a happy childhood. No less valuable, they will also take the knowledge that industrial towns need not be squalid, but that, properly planned and built, they can be as good places to live in as Cambridge or even Chesham, Bucks.

House of Lords. TAYLOR.

SIR,—With Dr. Ffrangcon Roberts' view that Lord Taylor "should direct his great abilities to the propagation of birth-control" many will agree: this is a matter to which all should direct their abilities, whether great or small. But to confine our attention to this country is to be parochial. Let it be borne in mind that there are already 175 million Americans in the world, that the 400 millionth Indian will be here soon, and that China's population is increasing by about 13 millions a year.

L. N. JACKSON.
Honorary Editor, *News of Population and Birth Control.*

International Planned Parenthood Federation, 69, Eccleston Square, London, S.W.1.

## MEDICAL ASPECTS OF ADOPTION

SIR,—The article by Dr. Black and Dr. Stone (Dec. 13) seemed very reasonable and useful. I agree entirely that anyone who passes a 2–3 weeks' old baby for adoption without seeing it again is indeed rash. I have even heard of prematurely born babies being passed for adoption a week or two after birth. I personally would never pass a full-term baby for adoption before the age of 6 weeks.

Though one can probably diagnose most cases of mental deficiency by the age of 6 to 8 weeks, one is on much safer grounds at the age of 6 to 8 months, when there are several important fields of development available for assessing the baby. By that age the likelihood of error should be very small.

I am a little concerned whether some people, reading the article by Dr. Black and Dr. Stone, might read too much into their call for caution where certain prenatal or perinatal factors are present. I am sure that it would be altogether wrong to exclude babies from adoption, or to delay adoption proceedings much, because a parent was mentally defective, or because there was fœtal distress, perinatal anoxia, considerable prematurity, or emotional deprivation in the early months. The great majority of infants with these adverse antecedents grow up to be perfectly normal children. It must constantly be borne in mind that it is a very great tragedy for a baby to be dubbed unsuitable for adoption when in fact it is normal. One has to consider the baby as well as the adopting parents.

I feel unhappy about the wisdom of implanting doubt and fears in the minds of adopting parents concerning the possibility of signs of "brain damage" appearing later. By the age of 6 to 8 months all but the milder forms of the spastic type of cerebral palsy should be picked up, though one certainly could not eliminate the possibility of athetosis manifesting itself later. I presume that Dr. Black and Dr. Stone have in mind recent work concerning the higher incidence of certain behaviour problems in children who had anoxia at birth than in those who did not. It would surely be wrong to exclude from adoption all the very many babies who are asphyxiated at birth, on the ground that they might subsequently develop these problems. I doubt whether the authors mean that, but it may be read into their paper. Is it not too much of a generalisation to say bluntly "The hyperkinetic child is a brain-damaged child"? I would have thought that it would be more accurate to say that "There is some evidence that one of the causes of abnormal hyperkinesis is cerebral anoxia in the fœtus".

The sooner a baby is placed with adopting parents the better for the baby. Adoption proceedings can be commenced, but if the final examination, before the adoption is clinched, could be deferred to the age of 6 to 8 months, I believe that many of the tragic errors in the assessment of babies could be eliminated.

I have recently gone through my notes of 800 children with cerebral palsy or mental retardation, and have been impressed by the number of those who were adopted children. Dr. Black and Dr. Stone have done a service in calling for greater caution in assessing babies for adoption.

The University of Sheffield Department of Child Health, The Children's Hospital, Sheffield. R. S. ILLINGWORTH.

SIR,—I read with great interest the article by Dr. Black and Dr. Stone in your issue of Dec. 13, and I find myself in almost complete agreement with them. As a medical

member of the Hurst Committee on Adoption (1954) and as a psychiatrist, I was particularly insistent on the need for full medical examination both of the child and the adopters. The report (para. 141) states:

"In all cases we think it right that the Court should have proper advice about the state of the applicants' health both physically and mentally. Indeed, we think that it is of fundamental importance and we considered whether an examination by the applicants' own doctor should be required. The cost of this might deter prospective applicants of small means however and we therefore recommend that all applicants for an adoption order, other than the father or mother of the child (and his or her spouse on a joint application) should be required to undergo a medical examination by a doctor appointed by the Court and remunerated from public funds. The Court doctor would be able to consult the family doctor in any case of doubt and in cases arranged by a local authority or an adoption society he should have access to any medical report obtained by the authority or society. We therefore recommended (paragraph 142) that the report should include certain items of information on health matters which are scheduled in Appendix 3."

In addition to the information on physical health, these include the general opinion of the examining doctor in regard to the applicants' mental and emotional stability; psychological suitability to adopt a child; and whether there is any reason to expect that the applicants' health may deteriorate before the child has reached the age of independence. It also requires information as to whether the applicant has suffered at any time from any nervous or mental disorder, and whether there is any relevant family history of mental or physical disease, and whether the applicants are now in good health.

In para. 143 we discussed medical investigation of the child and we stated:

"There must be cases in which Courts would wish to satisfy themselves that the applicants understand the nature of any abnormality or defect which the child may have shown and we were told that the medical certificates now attached to the forms of application are not always adequate for this purpose. We therefore recommend a schedule of health matters on which information should be obtained, of which details appear in Appendix 4."

The committee were greatly disturbed by the difficulty of obtaining adequate information in the case of many third-party adoptions, especially where the child was illegitimate and little was known of the father or his family history. They were anxious to try to avoid the tragic situation created by placing a child for adoption who subsequently develops mental or physical handicaps of which the adopters were not aware beforehand.

Another point which the committee considered, and which accords with the views of Dr. Black and Dr. Stone, was the practice of some doctors who arrange third-party adoptions with the object of curing a woman who is neurotic or bolstering up a marriage which is about to break down. We had considerable evidence that this occurs only too frequently. Para. 33 of the report deals with this question at length and quotes an example of the undesirable attitude of certain doctors. This also applies to matrons of some maternity nursing-homes. The report, in an attempt to apply some safeguard for third-party adoptions, recommended that all third parties should be made respondents to the application, and insisted on adequate investigation, by skilled social workers, not only of the suitability of the material conditions of the adopters' home but also of their motives for wanting to adopt a child. The committee were well aware of the psychological damage that can be done in relation to adoptions and placing for adoption.

It is extremely unfortunate that magistrates and county courts have no funds available for paying a doctor appointed by the court to give a medical opinion on the suitability of the adopters. The new law will undoubtedly make some improvement in the situation, but unfortunately it has not embodied all these proposals of the committee. It is to be hoped, however, that the whole situation will be kept under careful review and that the law and regulations in relation to adoption may be modified from time to time in the light of further experience.

London, W.1. DORIS M. ODLUM.

## LATEX FIXATION TEST IN RHEUMATOID ARTHRITIS

SIR,—Dr. Coke's letter of Dec. 13 concerning latex particle suspensions from Styrene Products Ltd. is a little optimistic and could lead to unjustified disappointment with the results of the latex fixation test.

Styrene Products have produced several experimental batches of latex particles, samples of which they have sent to me for investigation. It seems proper to point out that there remain some unsolved problems in the production of a suitable suspension. The material so far produced by Styrene Products gives clear-cut results with strongly reacting sera in low dilution, but I have found the results with weaker sera and in serum titrations to be rather poor and not comparable with those obtained with the Dow suspensions.

No doubt it will not be long before Styrene Products have a suitable preparation.

Stoke Mandeville Hospital, Aylesbury. C. L. GREENBURY.

## URINARY CATECHOLAMINES IN THE DIAGNOSIS OF PHÆOCHROMOCYTOMA

SIR,—Dr. Wright (Nov. 29) states that (*a*) 5-hydroxytyramine can be estimated quite simply in the eluate obtained from the ion-exchange resin described by coupling with ethylenediamine and measuring its fluorescence; and (*b*) that the estimation has not usually been performed because the significance of the result is obscure and the presence of high levels of 5-hydroxytyramine does not necessarily correlate with the presence of a phæochromocytoma.

With regard to the first point, it would appear highly probable that catechols other than catecholamines would be present in the final eluate from the resin and that they would subsequently fluoresce in the ethylenediamine reaction. Thus interference would be caused not only by catechols known to be related metabolically to the catecholamines, such as 3 : 4 dihydroxyphenylacetic acid (dopac), present in urine in amounts similar to those of 5-hydroxytyramine, but also by substances such as 3 : 4 dihydroxycinnamic acid (caffeic acid) whose presence is presumably quite independent of the former substances.

When 5-hydroxytyramine is estimated following its chromatographic separation from other catechols, figures not exceeding 200 μg. per day have been reported for more than 100 urine specimens in a series of hypertensive and normal individuals, the only exception being a case of chromaffin tumour.[1] Another more recent case of phæochromocytoma excreted in the urine as much as 3000 μg. per day of 5-hydroxytyramine, a similar amount of dopac, but only a relatively small excess of noradrenaline and no detectable adrenaline.

A chromaffin tumour may contain 5-hydroxytyramine almost exclusively, though this is not to say that the urinary pattern of catecholamine excretion is necessarily the same.

Weil-Malherbe and Bone[2] reported one case of phæochromocytoma in which the excretion of 5-hydroxytyramine, but not that of adrenaline or noradrenaline, was reduced when

1. McMillan, M. *Lancet*, 1957, i. 715.
2. Weil-Malherbe, H., Bone, A. D. *J. clin. Path.* 1957, **10**, 138.

the diet was free of protein; nevertheless the excretion of 5-hydroxytyramine was still much above the normal level.

In the present state of knowledge then it would appear inadvisable to neglect the estimation of 5-hydroxytyramine in cases of suspected tumour.

Royal Infirmary, Edinburgh. MARY MCMILLAN.

## SODIUM AND POTASSIUM IN NORMAL AND PRE-ECLAMPTIC PREGNANCY

SIR,—We fear that Dr. Robinson (Nov. 29) has misunderstood the data in our article of Nov. 22 when supporting her contention that the administration of salt cures pre-eclampsia. We found that the total amount of sodium in the body is almost identical in pre-eclampsia and in normal late pregnancy. In pre-eclampsia, however, water is stored to excess without a commensurate rise of sodium storage so that the sodium content per kg. of body-weight is reduced in pre-eclampsia.

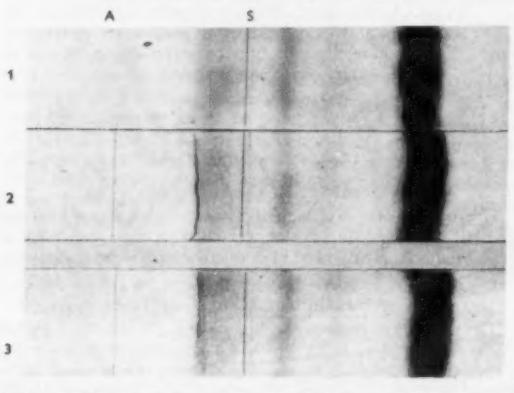
These findings do not in any way indicate that the administration of extra sodium would "cure" the abnormally high water storage or affect blood-pressure beneficially. Indeed, such treatment would be expected, if anything, to induce further storage of water.

Departments of Midwifery and Medical Physics, University of Aberdeen. I. MACGILLIVRAY T. J. BUCHANAN.

## AN ELECTRO-PRECIPITIN TEST

SIR,—With the increasing interest in thyroid autoantibodies which has been aroused by the valuable work of Dr. Roitt and Dr. Doniach, we should like to draw attention to a quick and simple means of detecting "thyroglobulin" antibodies. The method was first exhibited here in April, 1957, at a meeting of the Endocrine Section of the Royal Society of Medicine. It has since been developed for routine use.

When equal volumes of saline extract of human thyroid (1 in 20 w/v) and patient's serum, applied 5–6 cm. apart on a strip of filterpaper, are treated electrophoretically in barbitone buffer (pH 8·6), the antigen can be caused to overtake the serum γ-globulin fraction. If the γ-globulin fraction contains thyroid antibodies precipitation may occur. This can be demonstrated by any conventional staining procedure. Thus a "Hashimoto serum" sometimes requiring several days to produce a positive agar precipitin test will show on the paper a new protein fraction which varies in width from a diffuse band to an intensely sharp line (see accompanying figure).




**Paper electro-precipitin patterns: (1) serum-protein pattern of patient A. L. showing increased γ- and β-globulins; (2) 50 μl. serum (A. L.) applied at S; 50 μl. thyroid extract (1 in 40) applied at A; (3) serum (E. F.) and thyroid extract (1 in 20).**

We feel that this technique, which allows also for an assessment of albumin and globulins, may be useful to small laboratories not equipped to carry out the more involved tanned-red-cell agglutination test.

Department of Pathology, Derbyshire Royal Infirmary, Derby. D. WATSON H. WHINFREY.

## CLEANING OF GRIMY WOUNDS

SIR,—I should like to add to Dr. Wilkinson's letter of Dec. 13.

At my last post, which was in the heavy engineering industry, dirty wounds of the hands were, next to eye injuries, the commonest injury to be treated at the works' medical centres. Cetrimide solution and ether soap were fairly good cleansers, but the process of wound cleansing and general cleaning of the injured hand was time-consuming and often difficult in an apprehensive patient.

In view of these difficulties, jelly hand-cleansers, of the type described by Dr. Wilkinson, were used. Naturally, in a factory medical department many samples were available. The paste type of hand cleanser, which often contains abrasives, was not used in this trial.

The cleansers were placed in turn in a wall-fitting plunger-type dispenser placed over a wash-hand-basin fitted with a mixer tap. The dispenser gave measured amounts of the cleansers, which could be varied. After the wound of the hand or forearm had been thoroughly inspected and found suitable to be treated in this way, the patient was instructed to wash the part thoroughly, including all the surrounding area, in running water from the mixer tap, using the cleanser. While this was happening, the nurse prepared to treat and dress the wound. Apprehensive patients proved far less difficult to treat when encouraged to clean their own wounds. Any second visits from these patients showed how effective this method was by the alacrity with which they attended to their own wound toilet.

The patients dried their hands and arms with a hot-air drier. It was felt that this would limit the possibility of cross-infection. Individual cloth or paper towels were considerably more expensive and required much more space than the hot-air drier.

The wound was then further cleaned with cetrimide solution if necessary, and suitable dressings applied.

No very great variation was found in the three jelly cleansers that were used. Oils and greases mixed with dirt were easily removed, but paint, if it had dried, required a more powerful solvent. Wound healing appeared to proceed satisfactorily. There was a small decrease in the incidence of sepsis. No untoward reactions followed.

While the cleansers were all effective from the point of view of removal of grime, there were certain unwanted features. One of them had an odour which some people found most unpleasant, and another left a coating of castor oil on the skin, which was not considered to be of advantage when the cleanser was used for this purpose. All of them needed very thorough rinsing to remove the residue.

A fourth cleanser of our own concoction was therefore tried. This consisted of a plain jelly cleanser and liquid soap. Various strengths were used, and a 25%-cleanser/75%-liquid-soap mixture was considered to be about the best and was quite stable. In use it was found that the cleanser removed the oily grime easily, while the soap produced a foam which lifted the dirt and made rinsing very much easier and quicker. This cleanser/liquid-soap mixture had very definite economic advantages over the other cleansers when used in bulk.

As a final refinement for those men returning to their work, a suitable barrier cream was applied to the exposed parts of the cleaned hand or arm.

United Kingdom Atomic Energy Authority, Industrial Group, Capenhurst, near Chester. G. THOMAS.

# Parliament

## Nuclear Hazards

ON Dec. 16 at the report stage of the Nuclear Installations (Licensing and Insurance) Bill, Lord MILLS, the Minister for Power, moved an amendment, which was accepted, to extend the time-limit for the presentation of claims from 10 years to 30 years.[1]

## Mental Health Bill

On Dec. 17 Mr. DEREK WALKER-SMITH, the Minister of Health, presented a Bill to repeal the Lunacy and Mental Treatment Acts, 1890 to 1930, and the Mental Deficiency Acts, 1913 to 1938, and to make fresh provision for the treatment and care of mentally disordered persons and their property and affairs. The second reading will be on Jan. 20.

## QUESTION TIME

### Hospital Building Programme

In a written answer the Minister of Health announced that it was proposed to spend £25½ million on capital development in the hospital service in England and Wales in 1960–61, compared with £22 million already announced for next year, 1959–60.

Hospital boards were being informed of their individual allocations within this total for the modernisation of mental hospitals, the replacement of obsolete plant, and ordinary capital expenditure. £10 million would be set aside for the programme of major projects which were financed centrally. This programme would be further expanded and he was inviting boards to complete the planning of a number of additional major projects by 1960–61.

He had already authorised an architectural competition for the new Cardiff teaching hospital; and in the light of the advice he had received from the University Grants Committee he was considering with the hospital boards concerned what dental hospital projects should be undertaken to increase the output of the dental schools as recommended by the McNair Committee.

He gave the following details of the programme:

New buildings will include the first phases of new general hospitals for north Tees-side and at Northwick Park for the Wembley-Harrow area; a further stage of the new Sheffield teaching hospital of which the outpatient department is now being built; the start of the reconstruction of Queen Mary's Hospital, Sidcup; a blood-transfusion centre at Liverpool; and later stages of some new hospitals already in the programme; new radiotherapy departments at Newcastle, Sheffield, and Birmingham.

Extensions will be made at the High Wycombe Memorial Hospital; Crewe Memorial Hospital; Mayday Hospital, Croydon; Queen Mary's, Stratford; the Royal Gwent Hospital, Newport; Southampton General Hospital; St. Stephen's Hospital, Fulham Road; Billinge Hospital, Wigan; Yeovil and District Hospital; Good Hope Hospital, Sutton Coldfield; and Coventry and Warwick Hospital.

The transfer is to increase the allocations made last year in order to allow development to take place at both Ilford and Barking, and to permit as the first phase of hospital development in Hull the improvement of the Western General Hospital. He has also asked for plans to be prepared for hospital development in Bradford.

In the mental health field additional beds are to be provided at the mental-deficiency hospitals at Greaves Hall, Southport; Cranage Hall, Holmes Chapel; and Oakwood Park, Conway; extensions will be made to Borocourt (near Reading), and Little Plumstead (near Norwich) mental-deficiency hospitals; improvements at Fulbourn Mental Hospital, near Cambridge; and new long-stay annexes at Lynfield Mount Mental Hospital, Bradford. A psychiatric block is also to be provided at the new Welwyn Hospital.

### Hospital Treatment for Civilians Overseas

Miss ALICE BACON asked the Prime Minister whether he would take steps to ensure that free treatment was provided for British civilians in all hospitals abroad for which any Government Department was responsible?—Mr. R. A. BUTLER, the Home Secretary and Lord Privy Seal, replied: The only such hospitals are those for which the Minister of Defence and the Service Ministers are responsible. The question of free treatment for civilians in these hospitals is now under consideration.

Miss BACON: Is the Minister aware that up to now the Minister of Health, while making reciprocal arrangements with countries abroad, has so far failed to accept responsibility for coming to similar arrangements with other Government Departments? May I take it from his reply that something is now to be done in this matter?—Mr. BUTLER: What my answer means, on behalf of the Prime Minister, is that we are now looking at the whole question again. Dependants of Service families are already catered for. This raises the broader question of the civilian abroad, the question of the inter-relation of Government Departments and their responsibility, and the question of how to deal with civilians abroad. I could give no definite undertaking of what result the inquiry will have. We think the matter sufficiently serious for immediate examination.

Mr. H. A. PRICE: Is the Minister aware that a constituent of mine, a captain home from Cyprus after three years' service there, has been debited with £96 for treatment in the British Military Hospital, Nicosia, for his mother-in-law, who was in Cyprus as a dependent relative? Does not the Minister feel that such a bill should be met either by the War Office or the National Health Service?

### British Hospital in Paris

Lord STONEHAM put on the Order Paper a question asking the total capital cost of acquisition, rebuilding, and equipment of the former Hertford Hospital in Paris, the present total number of medical and nursing officers, and the average number of patients (excluding outpatients).—The Marquess of LANSDOWNE, joint parliamentary under-secretary of State for Foreign Affairs, in his reply, stated that the total capital cost of rebuilding and equipping the Hertford Hospital in Paris was estimated at £261,000. There were 5 R.A.M.C. officers on the staff and 7 nursing officers of the Q.A.R.A.M.C. The average number of inpatients was 29.

Lord STONEHAM: While commending the Government for providing these excellent hospital facilities for British personnel and their families in Paris, may I ask the noble Marquess whether he is satisfied that this fully staffed hospital, with more than half its beds unoccupied, is justified? Would it not be just as effective if we could arrange for the French or the United States hospitals to supply these services on an agency basis? Alternatively, could he arrange for this hospital to be fully used by making it available to British Commonwealth citizens who are in Paris?—The Marquess of LANSDOWNE: I think I should say at once that the whole future of this hospital is under active consideration, so it would be better for me not to anticipate any decisions that may come out of those deliberations. I am informed that out of the 60 beds that are available in the hospital, 35 are for military personnel and their dependants, and 25 are for civilian patients.

### Local Authorities' Mental Health Services

The approximate net expenditure on mental health services provided by local authorities under section 28 or 51 of the National Health Service Act, 1946, is shown below:

| | £ *million* |
|---|---|
| 1955–56 | 2·65 |
| 1956–57 | 3·15 |
| 1957–58 | 3·65 |
| 1958–59 | 4·1 |

### Domiciliary Consultations

The number of consultants in contract with regional hospital boards in England and Wales was 4916 in 1950 and 5945 in 1957. The average number of domiciliary visits per consultant was 31·2 and 47·0 respectively.

### Certification of Mental Patients

The number of persons certified during 1957 under section 6 of the Lunacy Act, 1890, which requires that the petition for a reception order shall be accompanied by two medical certificates, was 38. The vast majority of the remaining 14,381 certified direct admissions which took place during the year were made on reception orders founded on one medical certificate.

1. See *Lancet*, Dec. 13, 1958, p. 1291

## Medicine and the Law

### Death of Worker at Atomic Research Station

A 28-YEAR-OLD assistant experimental officer at the Springfield research station of the Atomic Energy Commission has died from a chorioncarcinoma arising in a testicular teratoma.

He collapsed and died soon after admission to hospital for radiotherapy. At an inquest [1] [2] in Manchester on Dec. 17 a pathologist said he thought death was unconnected with his work at the research station. Death was due to hæmoperitoneum caused by rupture of a hæmorrhagic secondary deposit in the liver. The bone-marrow and the unaffected testis had shown no evidence of radiation damage. The pathologist had examined the records of 7 deaths from the same cause in men between 20 and 44, and, as far as he knew, this type of cancer had never been associated with radiation. The dead man's work was concerned with raw materials, which included uranium compounds, in the analytical laboratories. The coroner observed [2]:

"Having heard the pathologist's evidence, the jury can reach only one possible verdict. Yet at the same time this young man has been suddenly struck down by cancer while working in a place where one might have thought he was liable to get it. In my opinion this is a very curious coincidence indeed."

A verdict of death from natural causes was recorded.

## Obituary

### GEOFFERY HENRY GEORGE SOUTHWELL-SANDER

B.A., M.B. Cantab., D.P.H., D.I.H.

Surgeon Captain Southwell-Sander, who died on Dec. 6, was assistant to the Medical Director General of the Navy in hygiene and in preventive and industrial medicine. During the three years he held this appointment and in his earlier postings at Naval dockyards he had played a large and effective part in fostering the practice of industrial medicine in the Service.

From Charterhouse he went to Caius College, Cambridge, and he qualified from St. Thomas's Hospital in 1930. Before he joined the medical service of the Navy in 1933 he held house-appointments at St. Thomas's and at the Brompton Hospital, took the D.P.H., and gained useful experience in his father's practice near Maidstone. From 1938 to 1941 he served as clinical pathologist in the R.N. Hospital in Bermuda, and soon after he returned to this country he was appointed to the Medical Department at the Admiralty. His work there stimulated his interest in industrial medicine and its application in the dockyards, aircraft repair yards, and ships of the Navy. In 1950 he took the D.I.H.; the same year he was posted to the dockyard at Singapore, and two years later he became senior medical officer to the dockyard at Portsmouth. At this time the *Home Dockyard Regulations* of the Service were being brought up to date; and the revised version owes much to his expert knowledge, enthusiasm, and wide practical experience. The handbook on industrial health which he wrote last year was officially approved and has been circulated to the medical officers of his Service. He had also written some sections of the comprehensive handbook for Naval medical and dental officers which is at present being prepared. For some years he had lectured on his specialty to newly joined medical officers at the R.N. medical school at Alverstoke.

The value of his contribution to Naval medicine was enhanced by his association with his colleagues outside the Service. He was one of the original members of the Joint Services and Factory Committee on Occupational Health. He was a past president of the Services group of the Society of Medical Officers of Health, and Naval secretary of the epidemiology section and a member of the United Services section of the Royal Society of Medicine. He was awarded the Gilbert Blane medal in 1947 and the Parkes prize in 1955.

M. A. writes:

When Southwell-Sander entered the Naval Service it was soon clear that he would make his mark. He was more mature than the average young medical officer, perhaps because of his wider background of experience. His friendly and engaging personality, coupled with the wholehearted energy which he devoted to all he undertook, ensured success in his chosen career.

Captain Southwell-Sander leaves a wife and a son.

1. *Times*, Dec. 18
2. *Manchester Guardian*, Dec. 18

### AUSTIN DARLEY WALL

M.B. Lond., F.R.C.S

Mr. A. D. Wall, surgeon to the Paignton and District Hospital, died on Nov. 25.

He was born in 1896 at West Kirby in Cheshire, and was the fourth son of the late Mr. C. T. Wall of Liverpool. He held scholarships at Oundle and at St. Bartholomew's Hospital and, after service during the first world war in the Royal Navy, he qualified in 1918. While holding a demonstratorship in pathology at Barts he took the F.R.C.S. In 1925 he went out to Shanghai to join a group practice as a specialist in ear, nose, and throat surgery. In time his surgical work became more general, but he retained his interest in E.N.T. work and in 1938 he published a paper on tonsillectomy. In 1939 he returned to this country and joined the R.A.M.C. as a surgical specialist with the rank of major. He served at Narvik, Salerno, and Crete (where he was mentioned in despatches), and he landed in France with a military hospital on D-day+5.

In 1944 he was demobilised and settled in Paignton, where he was appointed to the staff of Paignton Hospital. At the start of the National Health Service he was graded S.H.M.O., but later was appointed to consultant status. For the past year he was president of the Torbay Medical Society.

J. B. writes:

Wall's outstanding qualities were kindness and courage, and his perseverance and intelligence won him his reputation for reliability and helpfulness. He was a delight to work with, was never known to blame anyone for setbacks or mistakes, and was never ruffled. Though occasionally absentminded he was never rude, and in the hospital and town generally he was deservedly a much-loved man.

Mr. Wall leaves a widow, formerly Miss Margaret McGregor, and two daughters.

## Appointments

BOWERBANK, SHEILA M., M.B. Durh.: assistant M.O., Ashford area, Kent.
MCCORMICK, A. J. A., M.B. Edin., F.R.C.S.E., D.O.M.S.: ophthalmologist, Exeter clinical area (Torquay).
MILNE, R. G., M.B. Aberd., F.F.A. R.C.S., D.OBST.: anæsthetist (S.H.M.O.), Aberdeen general and special hospitals.
RANKIN, N. E., M.B. Lond., D.PATH.: consultant pathologist, Boston group of hospitals, Lincolnshire.
WAUCHOB, D. W., M.B. Belf., D.P.H.: M.O.H. and principal school M.O., Blackpool.

**East Anglian Regional Hospital Board:**

BATHEJA, N. S., M.B. Lucknow, D.O.: registrar in ophthalmology, Norfolk and Norwich Hospital.
BRUCE, R. A., B.M. Oxon., M.R.C.P.: assistant chest physician, Cambridge area chest clinic.
CARTER, A. P., M.B. Lond.: surgical registrar, United Norwich Hospitals.
GREEN, H., M.B. W'srand, F.R.C.S.: surgical registrar, United Norwich Hospitals.
HARRIS, F. C., M.R.C.S., D.T.M. & H., D.C.P.: assistant clinical pathologist, West Suffolk area hospitals.
LEVERTON, J. C. S., M.D., M.S. Lond., M.R.C.O.G.: consultant obstetrician and gynæcologist, Peterborough and Stamford group of hospitals.
RANKIN, G. L. S., M.B. Cantab., D.OBST.: registrar in obstetrics and gynæcology, Ipswich and East Suffolk hospital group.
WILSON, I. S., M.B. Lond.: medical registrar, West Suffolk General Hospital.

# Notes and News

## REMUNERATION OF GENERAL PRACTITIONERS

LAST month the Minister of Health announced that the basic remuneration of N.H.S. doctors would be increased by 4% from Jan 1, 1959.[1] It has now been agreed that the increase in the net remuneration of general practitioners shall be effected as follows:

1. The capitation payment is to go up from 17*s*. 6*d*. to 18*s*. per annum. The loading (an additional payment for each person on the list between 501 and 1500) is to go up from 11*s*. 6*d*. to 12*s*.

2. The fee for the treatment of temporary residents (those patients who are not on a doctor's list and are staying in the area for less than three months) is to go up from 17*s*. to 18*s*. (There is an increase from 8*s*. 6*d*. to 9*s*. in the fee paid where the patient is temporarily resident in a convalescent home or similar institution.)

3. The special capitation payment paid to doctors who undertake dispensing for their patients in rural areas is to be increased from 9*s*. 9*d*. to 10*s*. (There is no change for those doctors who are paid, in the same way as retail chemists, for each prescription dispensed; they have received the increase given to retail chemists, whereas the dispensing capitation fee has not been recently changed.)

4. Initial practice allowances paid to doctors while they are establishing themselves in single-handed practice in areas short of doctors, and other supplementary annual payments and hardship payments, are also to be increased by about 4%.

5. Payments under the mileage scheme and for maternity medical services are to be increased by a further sum representing 3%.

The present average net income (i.e., net remuneration from all professional sources) of general medical practitioners is £2333. The 4% increase will bring this up to £2426. General practitioners last received an increase in their remuneration in May, 1957, when an interim increase of 5% on net remuneration was made. The total cost of the new increases for doctors and dentists will be about £5 million a year, of which nearly £2 million will go to general medical practitioners.

## CALL THE DOCTOR

A NEW book of this title[2] by E. S. Turner begins with a word of apology from one "who has never dissected a leg, remoulded a bust or been called out of bed at two in the morning to sniff the breath of an abusive alderman," but who has nevertheless presumed to write a social history of doctors. The apology is superfluous: other assets count for more than a registrable qualification when it comes to writing an entertaining history—and one of them is an ability to write history entertainingly. Those who have read Mr. Turner's previous books know that he is handsomely endowed with this gift.

Some doctors may open his survey of the profession with slight uneasiness; but in the event he has dealt with doctors accurately, humorously, and, on the whole, kindly. He could not, of course, be expected to overlook all the notable occasions when the Doctors Were Wrong. (He recounts with a certain glee how every physician in George II's court considered that the monarch's painful thumb was due to gout. "Spot" Ward, however, though an unqualified charlatan, knew a dislocation when he saw it and reduced it with one deft movement. He received for his pains a hack on the shins—and later a coach and six horses.) But he displays an equal pleasure in recounting little-known episodes of skill and devotion. He says of Dr. W. G. Grace "that during a match in which he made two centuries he sat up all night with a poor woman whom he had promised to attend while in her labour". The activities of the body-snatchers are vividly recorded. ("With such skill were graves restored that many a mourner who prayed for the resurrection of a lost one did so unaware that the lost one had already been resurrected").

This picture of doctors is very different from any predecessor; and those of its subjects who found it in their stockings this week will be well pleased, even if they had to go to the length of putting it there themselves.

1. See *Lancet*, Nov. 29, 1958, p. 1170.
2. Call The Doctor. By E. S. TURNER. London: Michael Joseph. 1958. Pp. 320. 21*s*.

### University of Oxford

On Dec. 13 the degree of B.M. was conferred on the following:

O. A. A. Bock, M. W. L. Gear, Kurt Hellmann, R. C. Cook, J. M. Hinton, R. B. Huddy, D. J. Wayne, B. R. Wilkey, F. C. Johnstone, P. J. H. Sellors, Christopher Bryan-Brown, B. I. Hoffbrand, O. W. Sacks, J. R. James, A. J. Wing, I. G. Cobham, A. L. Macmillan, J. S. Price, D. P. Wells, J. K. Kwok-Hoe Chong, Simon Nurick, A. C. Flind, P. B. Holroyd, W. M. Cowan, J. T. Silverstone, A. B. M. McMaster, R. G. L. Smith, J. C. Voigt, J. B. Evans, Moira C. Robertson, Christina Streatfield, Shirley C. W. Summerskill, Anne H. White, Clarice A. Baker, Elizabeth A. Herbert, Elizabeth R. Jacobs, Naomi S. Richman, P. H. Cole (in absentia).

### University of London

On Nov. 19 the degree of M.D. was conferred on K. M. S. Hume.

### University of Durham

On Dec. 13 the following degrees were conferred:

*M.D.*—E. V. Cox.

*Ph.D. (in the faculty of medicine)*.—Sadrul Islam Mohammed Golam Mannan.

*M.B., B.S.*—G. D. Gale, D. McK. Gemmell, Evelyn P. Hardy, Peter Hodgson, Malcolm McKay, Keith Matthews, Ochiabuto Christian Nwankwo, Ann E. Parker, Sumant Rai Patel, Margaret M. Sanderson, Dorothy A. Watson

### University of Aberdeen

On Dec. 17 the following degrees were conferred:

*M.D. (with commendation)*—A. H. Emslie-Smith.

*Ch.M.*—G. F. Cassie.

*M.B., Ch.B.*—Malcolm Adam, Alison Carss, Dorothy Poh Luan Chua, A. M. Cowe, G. R. Dawson, I. A. Garden, W. G. Johnston, M. McA. Lees, Norna Mackay, G. G. A. Middleton, Raymond Miller, J. S. S. Mowat, R. L. Renton, C. Y. S. Rettie, V. L. Tosh, A. V. R. Watson, A. S. Wiseman.

### University of Edinburgh

Mr. A. N. Smith has been appointed lecturer in clinical surgery, and Mr. N. L. Stokoe lecturer in ophthalmology.

### Royal College of Physicians of London

On Tuesday and Thursday, Feb. 3 and 5, at 5 P.M. at the college, Pall Mall East, S.W.1, Dr. A. R. Southwood will give the Milroy lectures. His subject will be aspects of preventive cardiology.

### London Hospital Medical College

*Liddle triennial prize (£200)*.—The subject chosen for the next award of this prize in 1961 is Mechanisms involved in Disturbances of Fluid Balance. Further particulars may be had from the dean of the college, Turner Street, E.1.

### Federal Government of Nigeria

Sir Samuel Manuwa, the chief medical adviser to the Federal Government, is retiring on Jan. 2. He is to be succeeded by Dr. C. M. Norman-Williams, deputy chief medical adviser to the Federal Government.

Dr. Norman-Williams was born in Lagos in 1911 and educated at King's College, Lagos, and Edinburgh University. He qualified in 1938, and he formerly held the appointment of A.D.M.S. in the Ministry of Health at Ibadan.

### Royal Society of Medicine

On Thursday, Jan. 1, at 8 P.M., at 1, Wimpole Street, London, W.1, the section of neurology will hold the first part of a symposium on cerebrovascular disease. The speakers will be Prof. Theodore Crawford, Sir George Pickering, and Sir Charles Symonds. Part 2 of the symposium will be held on Feb. 5.

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The Institute for the Study and Treatment of Delinquency will hold a conference on alcoholism and drug addiction from Jan. 2 to 4, at Avoncroft College, Bromsgrove, Worcs. Further particulars may be had from Miss Eve Saville, at the institute, 8, Bourdon Street, London, W.1.

A semi-permanent exhibition will be held from Jan. 5 to 24, at the Institute of Dermatology, Lisle Street, W.C.2, on diseases of the nails.

# Births, Marriages, and Deaths

## BIRTHS

LINDAN.—On Dec. 12, in Cleveland, Ohio, to Dr. Rosemary Lindan (née Jackson) and Dr. Olgierd Lindan—a daughter, Camilla Elspeth, sister for Nicholas and Christina.

*....for safer delivery*

# Ergo-Rondase

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## Academic and Educational

### BRITISH POSTGRADUATE MEDICAL FEDERATION
UNIVERSITY OF LONDON

"THE SCIENTIFIC BASIS OF MEDICINE"
1958–1959
SECOND TERM: JANUARY–MARCH, 1959

The following lectures, which are designed especially for research workers and specialists in training, will be delivered at The London School of Hygiene and Tropical Medicine, Keppel-street, W.C.1, on TUESDAY and THURSDAY afternoons at 5.30 P.M. during the second term of the session 1958–59. Admission free without ticket.

| *Date* | *Lecturer* | *Title* |
|---|---|---|
| January | | |
| 15th, Thurs. | Prof. M. MAIZELS, M.D., F.R.C.P. (Professor of Clinical Pathology, University College Hospital Medical School) | The Place of Chemical Pathology in Medicine |
| 20th, Tues. | Prof. J. HENRY DIBLE, M.B., LL.D., F.R.C.P. (Emeritus Professor of Pathology, University of London) | The Pathology of Limb Ischæmia. |
| 22nd, Thurs. | Prof. A. D. M. GREENFIELD, D.SC., M.B., B.S. (Professor of Physiology, Queen's University, Belfast) | The Regulation of the Blood Vessels in the Limbs |
| 27th, Tues. | Prof. C. V. HARRISON, M.D., B.SC. (Professor of Morbid Anatomy, Postgraduate Medical School of London) | Pathology of Pulmonary Hypertension |
| 29th, Thurs. | Dr. F. B. BYROM, M.D., F.R.C.P. (Department of Neuropathology, Institute of Psychiatry) | The Significance of Hypertensive Encephalopathy |
| February | | |
| 3rd, Tues. | Dr. OLIVER M. WRONG, B.M., M.R.C.P. (Department of Medicine, University of Manchester) | Sodium Excretion and the Control of Extracellular Fluid Volume |
| 5th, Thurs. | Dr. ALLAN F. ROGERS, M.D. (Department of Physiology, The University, Bristol) | Human Physiology in Antarctica |
| 10th, Tues. | Dr. J. M. WALSHE, M.A., M.B., M.R.C.P. (Assistant Director of Research, Department of Experimental Medicine, University of Cambridge) | Biochemical Studies in Hepatic Coma |
| 12th, Thurs. | Dr. PAUL FATT, B.A., PH.D. (Reader in Biophysics, University College, London) | Synaptic Excitation and Inhibition in the Central Nervous System |
| 17th, Tues. | Dr. LYNNE REID, M.R.A.C.P., M.R.C.P. (Senior Lecturer, Institute of Diseases of the Chest) | Chronic Bronchitis and Hypersecretion of Mucus |
| 19th, Thurs. | Dr. R. H. MOLE, B.M., M.R.C.P. (Radiobiological Research Unit, Atomic Energy Research Establishment, Harwell) | Radiation as a Toxic Agent |
| 24th, Tues. | Dr. T. A. J. PRANKERD, M.D., M.R.C.P. (First Assistant, Medical Unit, University College Hospital Medical School) | Viability and Survival of Red Cells |
| March | | |
| 3rd, Tues. | Prof. A. A. MILES, C.B.E., M.D., F.R.C.P. (Director, Lister Institute of Preventive Medicine) | Mediators of the Vascular Phenomena of Inflammation |
| 5th, Thurs. | Prof. D. F. CAPPELL, C.B.E., M.D., F.R.F.P.S.G., M.R.C.P., F.R.S.(ED.) (Professor of Pathology, University of Glasgow) | Iron Metabolism |
| 10th, Tues. | Prof. G. H. LATHE, PH.D., M.D. (Professor of Chemical Pathology, University of Leeds) | Metabolism of Bilirubin |
| 12th, Thurs. | Dr. C. L. COPE, D.M., F.R.C.P. (Senior Lecturer, Department of Medicine, Postgraduate Medical School of London) | The Measurement of Adrenal Activity in Man |

### UNIVERSITY OF LONDON
BRITISH POSTGRADUATE MEDICAL FEDERATION
INSTITUTE OF NEUROLOGY
(Queen-square)

2 COURSES OF CLINICAL DEMONSTRATIONS open to Postgraduates will be held at The National Hospital, Queen-square, on WEDNESDAYS at 4.15 P.M., from 7TH JANUARY to 18TH MARCH, 1959, inclusive, and on SATURDAYS at 10.30 A.M. from 10TH JANUARY to 21ST MARCH, 1959, inclusive.

The fee for attending either of these courses is 2 guineas.

Application for a ticket should be made to the Dean, Institute of Neurology, The National Hospital, Queen-square, W.C.1, and a remittance to cover the fee enclosed. Only postal applications will be considered.

### INSTITUTE OF ORTHOPÆDICS
ROYAL NATIONAL ORTHOPÆDIC HOSPITAL,
234, Great Portland-street, London, W.1

PROVISIONAL PROGRAMME

A COURSE OF LECTURES on Disorders of Joints will be given in the Lecture Room on FRIDAYS from 6 P.M. to 7 P.M. on the following dates:—

| | | |
|---|---|---|
| 9th Jan. | Infective Arthritis | Mr. H. J. BURROWS |
| 16th ,, | Tuberculous Disease of Joints | Mr. J. A. CHOLMELEY |
| 30th ,, | Chemistry of Synovial Fluid | Dr. P. G. WALKER |
| 6th Feb. | Rheumatoid Arthritis | Dr. R. NASSIM |
| 13th ,, | Dislocations (Traumatic) | Mr. J. N. WILSON |
| 20th ,, | Congenital Dislocation of the Hip | Mr. D. TREVOR |
| 27th ,, | Pathology of Joint Disease | Dr. H. A. SISSONS |
| 6th March | Cartilage in Joint Infection | Dr. C. H. LACK |
| 13th ,, | Arthrodesis and Arthroplasty | Mr. K. I. NISSEN |
| 20th ,, | Internal Derangement of the Knee | Mr. A. T. FRIPP |

The fee for the full course will be 3 guineas, or for a single lecture 7*s.* 6*d.*

Tickets may be obtained on application to the Dean, at 234, Great Portland-street.

### THE LONDON HOSPITAL MEDICAL COLLEGE

COURSE IN ADVANCED SURGERY

An evening Postgraduate Course in Surgery for the Final Examination of the F.R.C.S. will be held at The London Hospital from MONDAY, 9TH MARCH, to MONDAY, 27TH APRIL, 1959.

The Course will be held on Monday and Wednesday evenings from 6.30 P.M. to 8.30 P.M. with the exception of Monday, 30th March, and will be limited to 18 students.

The fees for the Course will be £12. An entrance fee of £5 5*s.* must be paid by non-London Hospital graduates.

Applications should be made to The Dean, H. B. MAY, M.D., F.R.C.S. The London Hospital Medical College, Turner-street, London, E.1.

### LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE

ACADEMIC POSTGRADUATE DIPLOMA IN BACTERIOLOGY OF THE UNIVERSITY OF LONDON

The COURSE for the Postgraduate Diploma in Bacteriology for the session 1959-60 will commence in OCTOBER, 1959. This is a full-time day course extending over 1 academic year. Fee for the course £73 10*s.* (including the School registration fee of £3 3*s.*).

The course may be taken by:—

(*a*) Graduates in Medicine, Science or Pharmacy of this or another approved University, whose previous training has, in the opinion of the University, fitted them to profit by the course.

(*b*) Registered medical practitioners and other students who, though not graduates, have obtained a qualification and undergone a previous training which, in the opinion of the University, has fitted them to profit by the course.

Applications for admission to the Diploma course must be received not later than 1st March, 1959.

Further information and application forms can be obtained from the Registrar, London School of Hygiene and Tropical Medicine, Keppel-street (Gower-street), London, W.C.1.

### SOCIETY OF APOTHECARIES OF LONDON

DIPLOMA IN INDUSTRIAL HEALTH

The next Examination will begin on MONDAY, 13TH JULY, 1959. The following Examination will be held in DECEMBER, 1959.

For Regulations apply Registrar, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

### FACULTY OF ANÆSTHETISTS OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND

ANÆSTHETICS COURSE

A 2 WEEKS' COURSE of lectures, demonstrations and tutorials for postgraduates preparing for higher diplomas in Anæsthetics will be held from 9TH to 20TH FEBRUARY, 1959.

Fees: Lectures and demonstrations, £15 15*s.* 0*d.*; tutorial discussion groups, £10 10*s.* 0*d.*

Further details and application forms may be obtained from Mr. R. S. JOHNSON-GILBERT, Secretary, Faculty of Anæsthetists, Royal College of Surgeons of England, Lincoln's Inn Fields, London, W.C.2 (tel. HOLborn 3474, ext. 23).

### FACULTY OF ANÆSTHETISTS OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND

Applications are invited from qualified medical practitioners of British nationality, specialising in anæsthetics, for a BURROUGHS WELLCOME FELLOWSHIP IN ANÆSTHESIA tenable at the University of California Medical Center, Los Angeles, for a period of 1 year from 1st September, 1959, value $4000.

Further information may be obtained from R. S. JOHNSON-GILBERT, ESQ., M.A., Secretary, Faculty of Anæsthetists, Royal College of Surgeons of England, Lincoln's Inn Fields, London, W.C.2, by whom applications must be received not later than 2nd February, 1959.

**UNIVERSITY OF LONDON. The Senate invite applications** for the CHAIR OF BACTERIOLOGY tenable at St. Mary's Hospital Medical School (salary within the range £2500–£3000 a year).

Applications (10 copies) must be received not later than 28th January, 1959, by the Academic Registrar, University of London, Senate House, W.C.1, from whom further particulars may be obtained.

## AUSTRALIA

THE UNIVERSITY OF NEW SOUTH WALES MEDICAL SCHOOL

FOUNDATION CHAIRS

The University of New South Wales is proceeding to establish a medical school at Kensington, Sydney.

Applications are invited from persons qualified to fill the following Foundation Chairs:—

MEDICINE.
SURGERY.
ANATOMY.
PHYSIOLOGY.
PATHOLOGY.

Salaries:—
Medicine and surgery—£A4750 p.a.
Pathology—£A4350 p.a.
Anatomy and physiology—£A3750 p.a.

Professors appointed to the Foundation Chairs will be responsible for the establishment of courses of instruction, promotion of research, and the planning of laboratories and other facilities. It is desirable that appointees enter on duty in Sydney as early as practicable but, in any event, not later than March, 1960. Subject to the consent of the Council of the University, Professors may engage in a limited amount of higher consultative work. Professors will be eligible to join the superannuation fund, which provides a pension of £A1638 p.a.

Professors are eligible for 6 months' study leave on full salary after 3 years of service, or 12 months after 6 years of service.

First-class ship fares to Sydney of appointees and their families will be paid.

The University reserves the right to fill any of these Chairs by invitation.

Further particulars of the conditions of appointment are available from the Agent General for New South Wales, 56, Strand, London, W.C.2.

Applications (4 copies), together with the names of 3 referees, should be lodged with the Agent General for New South Wales, 56, Strand, London, W.C.2, and a copy forwarded by airmail in an envelope marked "University Appointment" to the Bursar, University of New South Wales, Box 1, Post Office, Kensington, New South Wales, Australia, not later than 15th February, 1959.

**UNIVERSITY OF EDINBURGH. Department of Bacteriology.** Applications are invited from medical or honours science graduates for the appointment of LECTURER IN BACTERIOLOGY. Applicants for the post should have had experience in virology and in research methods. The duties of the successful applicant would be mainly concerned with undergraduate and postgraduate teaching and with research in virology. Salary scale £900–£100–£1300 : Bar : £1400–£100–£1900 p.a., with placement according to qualifications and experience, and with superannuation benefit and family allowance where applicable.

Further particulars may be obtained from the undersigned, with whom applications (6 copies), giving the names of 2 referees, should be lodged not later than 31st January, 1959.

CHARLES H. STEWART, Secretary to the University.

December, 1958.

**UNIVERSITY OF GLASGOW. Applications are invited** for a LECTURESHIP IN SURGERY at the Western Infirmary. Salary according to placement on University scale for Clinical Teachers. The final maximum is £1900 p.a. F.S.S.U. and family allowance benefits.

Applications (12 copies) should be lodged, not later than 31st January, 1959, with the undersigned, from whom further particulars may be obtained.

ROBT. T. HUTCHESON, Secretary of University Court.

**THE RESEARCH INSTITUTE, THE HOSPITAL FOR SICK CHILDREN, TORONTO, CANADA.** RESEARCH FELLOWSHIPS. Beginning 1st July, 1959, vacancies are available in the general fields of surgery, bacteriology, virology, metabolism of bone, enzymology, immunology; and clinical investigation unit. Applications invited from medical graduates (Male or Female) with some interest in pædiatrics. To start 1st July, 1959; salary $4800, live out.

Applications, with names and addresses of 2 referees, to be sent airmail to Director of Research Institute, The Hospital for Sick Children, Toronto.

## Hospital Services: Senior Appointments

**NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.**

1. CONSULTANT GENERAL SURGEON, whole-time or maximum sessions, for 1 of 3 general surgical units at Whittington Hospital, London, N.19 (1054 Beds).

Applications before 26th January, 1959.

2. CONSULTANT DERMATOLOGIST, 2 half-days a week, Barnet General Hospital, Wellhouse-lane, Barnet, Herts (461 Beds). Dermatological beds will be shared with the present Consultant.

Applications before 28th January, 1959.

3. CONSULTANT PATHOLOGIST, whole-time or maximum sessions, Mount Vernon Hospital, Northwood, Middlesex (551 Beds). Candidates should have special experience in morbid anatomy.

Applications before 2nd February, 1959.

4. CONSULTANT PHYSICIAN in Physical Medicine, whole-time or maximum sessions, Medical Rehabilitation Centre, 152, Camden-road, N.W.1, and Paddington General Hospital, Harrow-road, W.9 (561 Beds). Experience in rehabilitation essential.

Applications before 4th February, 1959.

Hospitals and Centre may be visited by direct appointment.

Application forms obtainable from and returnable to Secretary, North West Metropolitan Regional Hospital Board, 40, Eastbourne-terrace, W.2.

**ST. JAMES' HOSPITAL, Balham, London, S.W.12. Locum** SENIOR CASUALTY OFFICER (Senior Hospital Medical Officer grade) required from 16th February to 10th May, 1959.

Applications to Group Secretary at above address, giving full details, including age, and names of 2 referees.

**SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.** Applications are invited for the appointment of CONSULTANT in Neurology or Psychiatry (whole-time or 9 notional half-days weekly) to be in charge of and coordinate the Electroencephalograph Departments in the South East Metropolitan Region. Candidates must have had training and practical experience in the interpretation of electroencephalographic readings. The possession of a higher qualification in medicine is essential and postgraduate experience in either neurology, neurosurgery or neuropsychiatry is desirable. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staff (England and Wales). Candidates may visit the hospitals concerned.

Applications, stating nationality, age, sex, qualifications and experience, including details of present appointment and of war or national service, together with the names and addresses of 3 referees should be sent to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 40, Eastbourne-terrace, London, W.2, by 17th January, 1959.

**EXETER CLINICAL AREA. South Western Regional HOSPITAL BOARD.** Applications are invited for the appointment of a Whole-time CONSULTANT PSYCHIATRIST to the Exeter Clinical Area. Applicants must possess a higher qualification. The successful candidate will work mainly at Exminster Hospital, Exeter; in addition, he will be required to visit other hospitals in the clinical area as determined by the Regional Hospital Board from time to time. A flat will be available.

Applications (12 copies), stating date of birth, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 11th January, 1959.

**LEEDS REGIONAL HOSPITAL BOARD. Consultant in** Ophthalmology, Leeds and Otley (8 notional half-days per week). Duties at hospitals in the Leeds A Group, outpatient facilities at the Leeds Public Dispensary and Hospital and inpatients at St. James's Hospital, Leeds. Higher qualification essential. Duties include 1 session per week at Otley General Hospital, consultative work in connection with the School Eye Service and relief duties at hospitals in the Harrogate and Ripon Group. The person appointed to reside in Leeds.

Applications (12 copies), stating age, qualifications, and details of appointments held, showing dates, with names and addresses of 3 referees, to the Secretary, Park-parade, Harrogate, by 20th January, 1959.

**NEWCASTLE REGIONAL HOSPITAL BOARD. Senior** CASUALTY OFFICER, whole-time, for South East Northumberland Group of hospitals—main hospitals : Preston Hospital (363 Beds), Tynemouth Victoria Jubilee Infirmary (115 Beds). Population served 160,000. Appointment for a period not exceeding 4 years. Appointee will be required, subject to supervision of General and Orthopædic Surgeons, to organise the casualty work throughout the hospital group. Salary within range of £1653 15s.–£2126 5s. or £1548 15s.–£2126 5s. p.a. according to age. House available on rental basis.

Applications, with names and addresses of 3 referees, to Senior Administrative Medical Officer, Regional Hospital Board, Benfield-road, Newcastle upon Tyne, 6, within 28 days.

**SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD.** CLINICAL PATHOLOGIST, Consultant grade (whole or maximum part-time), to the Scottish Borders Hospitals Group based on Peel Hospital, near Galashiels. Vacant 1st April, 1959.

Apply, giving particulars of age, qualifications and previous experience, and the names of 3 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 17th January, 1959.

**SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD.** Locum Tenens RADIOLOGIST (Senior Hospital Medical Officer) for duty in hospitals in Fife.

Apply, giving particulars of age, qualifications and previous experience, and the names of 3 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3.

**SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time** SENIOR ASSISTANT PSYCHIATRIST required to be designated Deputy Medical Superintendent of Balderton Hospital, near Newark, a new hospital with 252 Beds at present for all grades of mental defectives. New ground floor flat available. Salary scale £1653 15s.–£52 10s.–£2126 5s. p.a.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 24th January, 1959.

**SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.** Applications are invited for an appointment as CONSULTANT DENTAL SURGEON (4 notional half-days weekly) in the South East Kent Group of hospitals. Candidates must have had a wide experience in dental surgery, and hold a higher qualification in dentistry. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staff (England and Wales). Candidates may visit the hospitals concerned.

Applications, stating nationality, age, sex, qualifications and experience, including details of present appointment and of war or national service, together with the names and addresses of 3 referees, should be sent to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 40, Eastbourne-terrace, London, W.2, by 17th January, 1959.

**SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD** requires part-time CONSULTANT RADIOLOGIST (5 half-days per week) for the Guildford Group (Haslemere Hospital), 4 half-days per week, and the Godalming and Milford Group, 1 half-day per week. Candidates must have D.M.R. and wide experience in radiology.

Applications by letter (5 copies), giving date of birth, qualifications, experience, and names of 3 referees, to Secretary (S.1), South West Metropolitan Regional Hospital Board, 40, Eastbourne-terrace, W.2, by 21st January, 1959. Applicants may visit hospitals by local arrangement.

**CHANNEL ISLANDS. JERSEY GENERAL HOSPITAL.** (200 Beds.) Applications are invited for the post of VISITING E.N.T. SURGEON from practitioners holding F.R.C.S. or D.L.O. The post falls vacant on 1st January, 1959, and the salary is at the rate of £800 p.a. for 4 sessions weekly. The successful applicant will be required to be resident in the Island and a private practice is permitted.

Applications to be submitted not later than 3rd January, 1959, to the President, Public Health Committee, General Hospital, Jersey, C.I.

**NEW ZEALAND. THE OTAGO HOSPITAL BOARD,** UNIVERSITY OF OTAGO, DUNEDIN, NEW ZEALAND. Applications are invited for the position of JUNIOR SPECIALIST ANÆSTHETIST, Otago Hospital Board, ASSISTANT LECTURER in Anæsthetics, Otago Medical School, which is vacant at the present time, from those who hold a Degree in Medicine from an approved University. The position is non-resident, is full-time and private practice is not permitted. The position is designated as that of Junior Specialist under the Hospital Employment (Medical Officers) Regulations. The salary scale will be £1640–£1940 p.a., and the commencing rate will be in accordance with the appointee's qualifications and experience. Duties will include routine hospital work and the practical teaching of anæsthetics to Medical and Dental Students. Travelling expenses will be paid in accordance with the information set out in the Conditions of Appointment, which, together with the prescribed application form, may be obtained from the High Commissioner for New Zealand, 415, The Strand, London.

Applications will be received by the undersigned until 10 o'clock A.M. on Monday, 2nd March, 1959.

W. A. WILLIAMSON, Secretary, Otago Hospital Board.
P.O. Box 946, Dunedin, N.Z.

## Hospital Services: Junior Appointments

**ALBERT DOCK ORTHOPÆDIC AND FRACTURE** HOSPITAL, Alnwick-road, E.16. SEAMEN'S HOSPITALS GROUP. SENIOR HOUSE OFFICER for Receiving-room duties required immediately. Post which is normally resident, is recognised by the Royal College of Surgeons, and provides excellent experience in a wide variety of traumatic conditions received from the adjacent dockland and from shipping in the Port of London. Salary £819 10s.

Applications, stating age, nationality, qualifications, and experience, with the names of 2 recent referees, should be sent to the Secretary, Dreadnought Seamen's Hospital, Greenwich, S.E.10, as soon as possible.

**CHINGFORD HOSPITAL, London, E.4. (104 Beds.)** RESIDENT HOUSE PHYSICIAN required for 6 months with duties at other hospitals in the Group.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

**DREADNOUGHT SEAMEN'S HOSPITAL, Greenwich,** S.E.10. HOUSE PHYSICIAN (pre-registration) required immediately.

Applications, stating age, nationality, qualifications and experience, with the names of 3 recent referees, should be sent to the Secretary at the above address as soon as possible.

**HIGHLANDS GENERAL HOSPITAL, Winchmore Hill,** N.21. HOUSE SURGEON for Gynæcological and General Surgery.

Applications, with copies of 3 testimonials and name and address of 1 referee, to Hospital Secretary.

**LAMBETH HOSPITAL, Brook-drive, S.E.11. House** SURGEON required for duty on 14th January, 1959. Applicants may be either registered or of pre-registration status.

Applications, giving full particulars and enclosing copies of 2 testimonials, to the Secretary.

**MIDDLESEX HOSPITAL, W.1, and NORTH WEST** METROPOLITAN REGIONAL HOSPITAL BOARD. Applications invited for post of SENIOR OBSTETRIC AND GYNÆCOLOGICAL REGISTRAR. Subject to annual reappointment the appointment will involve 2 years at the Whittington Hospital under the control of the North West Metropolitan Regional Hospital Board followed by 2 years at the Middlesex Hospital and the Hospital for Women, Soho.

Forms of application, obtainable from the Deputy Superintendent, The Middlesex Hospital, should be returned, naming 2 referees, by 10th January.

**MILDMAY MISSION HOSPITAL, Austin-street, London,** E.2. Applications are invited for the pre-registration post of RESIDENT HOUSE SURGEON (post recognised for F.R.C.S.) vacant January, 1959. Candidates should be in sympathy with the evangelical Christian aims of the Hospital.

Applications and references to be addressed to the Medical Superintendent as soon as possible.

**MILDMAY MISSION HOSPITAL, Austin-street, London,** E.2. Applications are invited for the pre-registration post of RESIDENT HOUSE PHYSICIAN/CASUALTY OFFICER, vacant January, 1959. Candidates should be in sympathy with the evangelical Christian aims of the Hospital.

Applications and references to be addressed to the Medical Superintendent as soon as possible.

**NELSON HOSPITAL, Kingston-road, Merton, S.W.20.** (123 Beds.) RESIDENT ANÆSTHETIST (Senior House Officer grade) with certain duties as House Physician in the Children's Ward and Casualty Department. Post recognised for D.A. Vacant 1st January, 1959.

Applications, stating age, qualifications and experience, with copies of testimonials and the name of 1 referee, should be sent to the Group Secretary, St. Helier Hospital, Carshalton, Surrey.

**NORTH LONDON BLOOD TRANSFUSION CENTRE,** Deansbrook-road, EDGWARE, MIDDLESEX. JUNIOR HOSPITAL MEDICAL OFFICER for full-time duties with mobile teams at donor sessions. The appointment is for 3 years.

Applications, giving age, qualifications, experience, and names of 2 referees, to the Director, not later than 3rd January, 1959.

**NATIONAL HOSPITALS FOR NERVOUS DISEASES.** Applications are invited from registered medical practitioners for the appointment of SURGICAL REGISTRAR at The National Hospital, Queen-square, London, W.C.1. This post carries the grade of Senior Registrar. The appointment will be for 1 year in the first instance.

Applications, with names of 3 referees, to be sent to the undersigned not later than 2nd January, 1959.

H. EWART MITCHELL, Secretary to the Board of Governors.
The National Hospitals for Nervous Diseases,
Queen-square, London, W.C.1.

**NORTH EAST METROPOLITAN REGIONAL HOSPI-**TAL BOARD.

**St. Andrew's Hospital, E.3**
MEDICAL REGISTRAR. Resident or non-resident.

**Poplar Hospital, E.14**
SURGICAL REGISTRAR. Resident or non-resident. Recognised for F.R.C.S.

**Whipps Cross Hospital, E.11**
ORTHOPÆDIC REGISTRAR. Non-resident, but temporary accommodation can be arranged.

**Essex County Hospital, Colchester**
CASUALTY AND ORTHOPÆDIC REGISTRAR. Resident or non-resident. Recognised for F.R.C.S. (casualty appointment).

**Harold Wood Hospital, Essex**
ANÆSTHETIC REGISTRAR. Resident or non-resident. Recognised for F.F.A. R.C.S. and D.A.

**St. Margaret's Hospital, Epping, Essex**
ANÆSTHETIC REGISTRAR. Resident or non-resident. Recognised for F.F.A. R.C.S. and D.A.

Appointments subject to review after 1 year.

Application forms from Secretary, 40, Eastbourne-terrace, W.2, to be returned by 10th January.

**PRINCE OF WALES'S GENERAL HOSPITAL, N.15.** Applications are invited for the appointment of RESIDENT SENIOR CASUALTY OFFICER (Senior House Officer), recognised for F.R.C.S. examination, to the above Hospital for a period of 6 months, vacant now.

Application form from Secretary, Tottenham Group Hospital Management Committee, The Green, N.15, to be returned immediately.

**QUEEN CHARLOTTE'S AND CHELSEA HOSPITALS.** ANÆSTHETIST (Senior House Officer). Resident post tenable for 6 months from 1st April, 1959, in the first instance, for duties at both hospitals. Post recognised for the purpose of the F.F.A. R.C.S.

Applications to the House Governor by 12th January, 1959, on forms obtainable from 339, Goldhawk-road, London, W.6.

**QUEEN CHARLOTTE'S AND CHELSEA HOSPITALS.** CHELSEA HOSPITAL FOR WOMEN. HOUSE SURGEON (Senior House Officer). Resident post tenable for 1 year from 1st April, 1959.

Applications to the House Governor by 12th January, 1959, on forms obtainable from 339, Goldhawk-road, London, W.6.

**QUEEN CHARLOTTE'S AND CHELSEA HOSPITALS.** QUEEN CHARLOTTE'S MATERNITY HOSPITAL. JUNIOR OBSTETRIC OFFICER (Senior House Officer). Resident posts tenable for 6 months from 1st April, 1959.

Applications to the House Governor by 12th January, 1959, on forms obtainable from 339, Goldhawk-road, London, W.6.

**QUEEN CHARLOTTE'S AND CHELSEA HOSPITALS.** QUEEN CHARLOTTE'S MATERNITY HOSPITAL. SENIOR HOUSE OFFICER in the Pædiatric Department. Resident post tenable for 6 months in the first instance from 1st March, 1959. Duties will include the supervision of the babies, research work under the visiting staff and charge of the follow-up clinics. Previous experience at a children's hospital is essential and possession of a higher qualification is desirable.

Applications to the House Governor by 12th January, 1959, on forms obtainable from 339, Goldhawk-road, London, W.6.

**QUEEN MARY'S HOSPITAL, Roehampton, London,** S.W.15. ORTHOPÆDIC REGISTRAR required, whole-time. National Health Service terms and conditions.

Detailed applications (4 copies), giving nationality, date of birth, qualifications, experience, present appointments, and names of 3 referees, should reach the Secretary, Ministry of Health, Division 4(v), Norcross, Blackpool, Lancs, by 16th January, 1959.

**ROYAL FREE HOSPITAL GROUP. Applications are** invited from registered Women medical practitioners for the resident post of REGISTRAR in Gynæcology and Obstetrics to work at Elizabeth Garrett Anderson and Hampstead General Hospitals. The appointment, which is for 1 year in the first instance, is vacant from 1st January, 1959.

Applications, giving experience, and the names of 3 referees, should be sent to the Secretary to the Board of Governors, The Royal Free Hospital, Gray's Inn-road, W.C.1, as soon as possible.

**ROYAL MASONIC HOSPITAL, Ravenscourt Park,** London, W.6. Applications are invited for the post of RESIDENT MEDICAL REGISTRAR. Appointment about 1st February, 1959. Gross salary: first year £935 (residential emoluments of £130 deductible); second year £1061 10s. (residential emoluments of £145 deductible).

Please state age, qualifications, past and present appointments, and include 2 recent testimonials and/or the names of 2 referees. Applications should reach the undersigned (from whom further information may be obtained) as soon as possible, and in any event not later than 5th January, 1959.

R. E. LAWSON, Secretary and House Governor.

**ROYAL NORTHERN HOSPITAL, Holloway, N.7. Appli-**cations are invited for the post of RESIDENT SENIOR HOUSE OFFICER (pathology) for Group Laboratory, vacant 14th January, 1959. The appointment will afford ample opportunity for study for a higher degree in medicine or surgery.

Applications to be sent to the Hospital Secretary by 3rd January, 1959.

**SOUTH LODGE HOSPITAL, World's End-lane, N.21.** RESIDENT SENIOR HOUSE OFFICER required. Infectious diseases, non-tubercular diseases of the chest and other general duties. Vacant 3rd February, 1959.

Applications, with names and addresses of 2 referees, to the Group Secretary, Enfield Group Hospital Management Committee, Chase Farm Hospital, Enfield, Middlesex.

**ST. BARTHOLOMEW'S HOSPITAL, E.C.1. Applications** are invited for the post of REGISTRAR in the Department of Anæsthetics for a period of 1 year in the first instance. The post is tenable from a date to be arranged early in 1959 and preference will be given to candidates who have obtained the Primary F.F.A.R.C.S. or the full qualification.

Applications, together with the names of 2 referees, should be submitted to the undersigned within the next 14 days.

C. C. CARUS-WILSON, Clerk to the Governors.

**ST. JAMES' HOSPITAL, Balham, London, S.W.12.** SENIOR HOUSE OFFICER (orthopædic and trauma) required immediately. Post recognised for F.R.C.S.

Applications, stating age, qualifications and experience, with copies of 2 recent testimonials, to Group Secretary, Wandsworth Hospital Group, at above address.

**ST. LEONARD'S HOSPITAL, Nuttall-street, London, N.1.** Applications are invited from registered or provisionally registered medical practitioners for the post of HOUSE SURGEON for 6 months.

Applications, with 2 recent testimonials, to Hospital Secretary, by 3rd January, 1959.

**ST. PETER'S, ST. PAUL'S AND ST. PHILIP'S HOSPITALS.** Required, REGISTRAR in Anæsthetics. Non-resident appointment on an annual basis.

Applications (12 copies), and names and addresses of 2 referees, to the House Governor, St. Peter's Hospital, Henrietta-street, London, W.C.2. Closing date 10th January, 1958.

**ST. THOMAS'S HOSPITAL and SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.** Joint Appointment. Whole-time SENIOR REGISTRAR in Obstetrics and Gynæcology at Lambeth Hospital and St. Thomas's Hospital. The successful candidate will be required to take part in undergraduate teaching.

Applications (7 copies), naming 3 referees, to Clerk of the Governors, St. Thomas's Hospital, London, S.E.1, by 17th January, 1959.

**ST. THOMAS'S HOSPITAL, London, S.E.1. Obstetric** HOUSE PHYSICIAN at the General Lying-in Hospital, York-road, S.E.1. For 6 months from 2nd March, 1959. Resident. Approved service for M.R.C.O.G.

Applications, naming 2 referees, from fully registered medical practitioners only, to Clerk of the Governors, by 3rd January, 1959.

**THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1.** There will be a vacancy on 6th March, 1959, for an ASSISTANT RESIDENT MEDICAL OFFICER (Senior House Officer grade) at the Country Branch, Tadworth, Surrey.

Further particulars and application form, to be returned by 1st January, 1959, obtainable from the House Governor.

**THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1.** There will be a vacancy in February, 1959, for a SURGICAL OUTPATIENT ASSISTANT (Senior Registrar grade) attending Monday mornings for a period of 6 months.

Further particulars and application forms, to be returned by 12th January, 1959, obtainable from the House Governor.

**THORPE COOMBE MATERNITY HOSPITAL, Walthamstow, E.17.** (58 Beds.) Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER. Experience in obstetrics is essential. Salary £819 10s. p.a., less £150 p.a. for board-residence.

Applications, with full details and copies of 2 recent testimonials, should be sent to Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

**WHIPPS CROSS HOSPITAL, London, E.11. Applications** invited for the post of pre-registration HOUSE PHYSICIAN (general medicine), which becomes vacant 16th February, 1959.

Application forms obtainable from the Hospital Secretary, to be returned by 6th January, 1959.

**WHIPPS CROSS HOSPITAL, London, E.11. Applications** are invited for the post of HOUSE SURGEON in the Orthopædic Department (post- or pre-registration). This post, which is recognised for the F.R.C.S., becomes vacant 11th February, 1959.

Application forms obtainable from the Hospital Secretary, to be returned by 6th January, 1959.

**WHIPPS CROSS HOSPITAL, Leytonstone, E.11. Leytonstone (NO. 10) HOSPITAL GROUP.** Applications are invited for the post of HOUSE SURGEON (post- or pre-registration) in the Orthopædic Department at above Hospital. This post, which is recognised for the F.R.C.S., becomes vacant 31st December, 1958.

Application forms obtainable from and returnable to the Hospital Secretary by 6th January, 1959.

**ABERYSTWYTH, CARDIGANSHIRE. GENERAL HOSPITAL. MID-WALES HOSPITAL MANAGEMENT COMMITTEE.** Pre-registration HOUSE SURGEON and HOUSE PHYSICIAN required at the above Hospital. Both vacancies occur on 1st January, 1959. Surgical post recognised for F.R.C.S.

Applications, quoting 2 referees, to Group Secretary, 31, North Parade, Aberystwyth, Cardiganshire, immediately.

**AYLESBURY, BUCKINGHAMSHIRE. ROYAL BUCKINGHAMSHIRE HOSPITAL.** HOUSE OFFICER (accident and orthopædic and children's general surgery) required 1st February, 1959. Pre-registration post but registered practitioners invited to apply.

Apply, with 2 names for reference, to Secretary-Superintendent.

**AYLESBURY. ROYAL BUCKINGHAMSHIRE AND ASSOCIATED HOSPITALS MANAGEMENT COMMITTEE.** Applications are invited for the appointments of HOUSE SURGEON, HOUSE PHYSICIAN to run consecutively for a period of 6 months in each post at Tindal General Hospital and Stoke Mandeville Hospital, commencing 1st February, 1959. Posts recognised for pre-registration.

Applications, with copies of 2 testimonials, to the Administrative Officer, Tindal General Hospital, Aylesbury.

**AYLESBURY, BUCKINGHAMSHIRE. STOKE MANDEVILLE HOSPITAL.** Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER in the National Spinal Injuries Centre. This post offers, apart from experience in general surgery and medicine, specialised experience in neurology, urology, physical medicine, and rehabilitation.

Full details of the duties can be obtained from the Administrative Officer, Stoke Mandeville Hospital, to whom applications should be sent as soon as possible.

**ALTRINCHAM GENERAL HOSPITAL and ANNEXE AND E.N.T. DEPARTMENT.** (183 Beds.) Required, JUNIOR HOUSE OFFICER (medical). This pre-registration post gives good opportunity for practical experience.

Applications to Group Secretary, North and Mid-Cheshire Hospital Management Committee, The Hospital, Sinderland-road, Altrincham, Cheshire.

**ASHFORD HOSPITAL, Ashford, Middlesex. (560 Beds.) STAINES GROUP HOSPITAL MANAGEMENT COMMITTEE.** Required, 4 HOUSE SURGEONS, mid-January, 1959. 6 months' appointments, suitable for pre-registration candidates.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital.

**AYRSHIRE HOSPITALS. Junior Hospital Medical Officer** (obstetrics and gynæcology). Maternity—Ayrshire Central Hospital, Irvine—100 Beds. Gynæcology—Ayr County Hospital, Ballochmyle Hospital and Kilmarnock Infirmary. Considerable work available under Consultant supervision. Ample facilities, pathological and library, and time for study for Membership candidate.

Applications, giving names of 2 referees, should be submitted to the Area Medical Superintendent, 1, Hill-street, Kilmarnock, Ayrshire.

**BARNSTAPLE. NORTH DEVON INFIRMARY. (105 Beds.)** HOUSE PHYSICIAN (pre-registration) required immediately.

Applications, naming 2 referees, to Group Secretary, North Devon Hospital Management Committee, 19, Alexandra-road, Barnstaple.

**BECKENHAM HOSPITAL, Kent. (102 Beds.) House** SURGEON required at above Hospital, 25th January. Recognised for F.R.C.S. Pre-registration post.

Apply, stating age, qualifications and experience, and naming 3 referees, to Hospital Secretary.

**BEDFORD GENERAL HOSPITAL. (424 Beds.) House** SURGEON required. Pre- or post-registration, recognised for F.R.C.S. Post offers exceptional opportunities for general experience in busy acute surgical units. Holder of this appointment will be favourably considered for appointment as House Physician at the termination of contract.

Applications, with copies of 2 recent testimonials, to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

**BIRMINGHAM, 9. LITTLE BROMWICH GENERAL HOSPITAL.** HOUSE PHYSICIAN (Male/Female). Recognised as pre-registration appointment. Post vacant 1st February, 1959.

Apply Physician-Superintendent, with copies of 2 testimonials.

**BIRMINGHAM REGIONAL HOSPITAL BOARD.**

(1) **Wolverhampton Group, The Royal Hospital, Wolverhampton**

(*a*) SURGICAL REGISTRAR, resident. Duties in Royal Hospital and New Cross Hospital. Married quarters available.

(*b*) REGISTRAR (orthopædics and traumatic surgery). Royal Hospital, Wolverhampton. All types traumatic and orthopædic conditions, also industrial work and rehabilitation which is carried out at a special unit of 60 Beds. Married quarters available.

(2) **Stafford Group, Groundslow Hospital, Stafford**

REGISTRAR (obstetrics and gynæcology) for Groundslow Hospital, which is an annexe of the Staffordshire General Infirmary. New unit. 35 obstetric beds (mainly abnormal) and 20 gynæcological beds. Furnished house available.

Application forms, from Group Secretary, to be returned by 5th January, 1959.

**BIRMINGHAM, 18. SUMMERFIELD HOSPITAL. (1082 Beds.)** JUNIOR HOSPITAL MEDICAL OFFICER in Geriatrics (fourth post). Non-resident. The unit provides ample opportunities for those wishing to specialise in geriatric medicine, having all the resources of a modern hospital and a large domiciliary visiting scheme.

Applications, with names of 2 referees, to Group Secretary, Dudley Road Hospital, Birmingham, 18.

**BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE BIRMINGHAM MATERNITY HOSPITAL.** Applications are invited from registered medical practitioners for the post of RESIDENT OBSTETRIC HOUSE SURGEON vacant on 1st March, 1959. The appointment is recognised for the M.R.C.O.G. and D.Obst.R.C.O.G.

Application forms obtainable from the House Governor, The Birmingham and Midland Hospitals for Women, Showell Green-lane, Sparkhill, Birmingham, 11, to be returned not later than 6th January, 1959. G. A. PHALP, Secretary.

**BISHOP AUCKLAND. THE GENERAL HOSPITAL. (350 Beds.)** RESIDENT SENIOR HOUSE OFFICER in Medicine required.

Apply within 14 days, giving details, and the names of 3 referees, to the Group Secretary, South West Durham Hospital Management Committee, at the above address.

**BISHOP AUCKLAND. THE GENERAL HOSPITAL.** (350 Beds.) SENIOR HOUSE OFFICER in Surgery required. Post recognised for the F.R.C.S. Furnished or unfurnished flat, comprising 2 bedrooms, sitting-room, dining-room/kitchen, bathroom and w.c., in Hospital grounds.

Apply within 14 days, naming 2 referees, to Group Secretary, South West Durham Hospital Management Committee, at above address.

**BOLTON AND DISTRICT HOSPITAL MANAGEMENT** COMMITTEE.

**The Royal Infirmary, Bolton** (246 Beds)

RESIDENT HOUSE SURGEONS (2). Vacant 1st and 25th February, 1959. Tenable for 6 months and recognised under pre-registration service scheme. Also recognised for F.R.C.S.

**Bolton District General Hospital** (607 Beds)

RESIDENT HOUSE PHYSICIAN for Department of Pædiatrics. Not available to pre-registration candidates. Vacant 1st February and tenable for 6 months. Hospital recognised for D.C.H.

RESIDENT HOUSE PHYSICIANS (2). Vacant 12th January and 24th February, 1959. Tenable for 6 months and recognised under pre-registration service scheme.

RESIDENT HOUSE SURGEON. Vacant 8th January, 1959. Tenable for 6 months and recognised under pre-registration service scheme. Also recognised for F.R.C.S.

Applications, stating age, nationality, qualifications, experience, and the names of 2 referees, to Group Secretary, The Royal Infirmary, Bolton.

**BOSTON GENERAL HOSPITAL (80 Beds)/LONDON** ROAD HOSPITAL, BOSTON (81 Beds). SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT SURGICAL REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 5th January, 1959, giving age, nationality, qualifications, present and previous appointments, with dates, naming 3 referees.

**BOURNEMOUTH (near). CHRISTCHURCH HOSPITAL,** CHRISTCHURCH, HAMPSHIRE. (334 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN (pre-registration interne) required for post becoming vacant on 10th February, 1959.

Applications to the Hospital Secretary.

**BRADFORD A AND B HOSPITAL MANAGEMENT** COMMITTEES. JUNIOR HOUSE OFFICER required for Geriatric Admission Unit. Post vacant now. Major portion of duties carried out at St. Luke's Hospital, Bradford.

Applications, stating age, nationality, qualifications and experience, with copy testimonials, to the Secretary, Royal Infirmary, Bradford, Yorks.

**BRADFORD CHILDREN'S HOSPITAL, Yorkshire. (100** Beds.) SENIOR HOUSE OFFICER (Male or Female) required. Vacant 1st February, 1959. Recognised for D.C.H.

Applications, stating age, qualifications, experience and nationality, together with copy testimonials, to the Secretary, Royal Infirmary, Bradford.

**BRADFORD ROYAL INFIRMARY, Bradford, Yorkshire.** (507 Beds.) SENIOR HOUSE SURGEON (Thoracic Unit) required. Vacant 1st February, 1959.

Applications, stating age, experience, nationality, qualifications, with copy testimonials, to the Secretary.

**BRADFORD, YORKSHIRE. ROYAL EYE AND EAR** HOSPITAL. (105 Beds.) SENIOR HOUSE OFFICER required for E.N.T. Department of 56 Beds. Recognised for D.L.O. and F.R.C.S. Post vacant 3rd January, 1959.

Applications, stating age, nationality, qualifications and experience, with copy testimonials, to the Secretary, Royal Infirmary, Bradford.

**BRIGHTON. ROYAL ALEXANDRA HOSPITAL FOR** SICK CHILDREN, Dyke-road, BRIGHTON. (130 Beds.) BRIGHTON AND LEWES HOSPITAL MANAGEMENT COMMITTEE. Vacancy for HOUSE SURGEON for 6 months from 7th January, 1959. The post offers wide experience in pædiatrics and is recognised for D.C.H. Open to pre-registration candidates.

Applications, stating age, nationality, qualifications and experience, together with copies of recent testimonials, to be sent to the Administrative Officer.

**BRIGHTON. ROYAL SUSSEX COUNTY HOSPITAL.** (314 Beds.) SENIOR CASUALTY OFFICER (Junior Hospital Medical Officer grade) required for busy Casualty Department (2 junior medical staff). Recognised for F.R.C.S.

Applications, stating age, qualifications and experience, together with the names of 2 referees, to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

**BRIGHTON. ROYAL SUSSEX COUNTY HOSPITAL.** (314 Beds.) CASUALTY HOUSE SURGEON required end December. Full and varied experience in busy Casualty Department (staff of 3), and also duties in Orthopædic and Traumatic Unit, including charge of beds. Recognised for pre-registration and F.R.C.S.

Applications, stating age, qualifications, experience, and naming 2 referees, to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

**BRIGHTON. ROYAL SUSSEX COUNTY HOSPITAL.** (314 Beds.) HOUSE SURGEON (including gynæcology) required 1st February, 1959. Pre-registration and recognised for F.R.C.S.

Applications, stating usual particulars, and naming 2 referees, to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

**BRISTOL. COSSHAM AND FRENCHAY HOSPITAL** MANAGEMENT COMMITTEE. FRENCHAY HOSPITAL. SENIOR HOUSE OFFICER, Regional Department of Neurosurgery. Vacant immediately, tenable for 6–12 months. The post offers useful surgical experience and the opportunity of gaining a working knowledge of neurological diagnosis. Recognised for F.R.C.S.

Applications to Group Secretary, Frenchay Hospital, quoting "N.S.F." Names of 2 referees required.

**BURNLEY GENERAL HOSPITAL. (650 Beds.) Resident** HOUSE OFFICER (surgical). The appointment is approved as a pre-registration post and recognised for F.R.C.S. Subject to satisfactory service, the successful applicant will be favourably considered for appointment as House Physician at the termination of contract as Surgical House Officer.

Applications, with 2 references, to Group Secretary, Burnley and District Hospital Management Committee, Burnley General Hospital.

**BURTON-ON-TRENT GENERAL HOSPITAL. (251** Beds.) ANÆSTHETIST (Junior Hospital Medical Officer grade). Busy general base hospital for area. 8 residents. Excellent experience. Recognised for D.A. Single furnished accommodation.

Applications to Group Secretary, General Hospital, Burton-on-Trent, Staffordshire.

**BURTON-ON-TRENT GENERAL HOSPITAL. (251** Beds.) HOUSE SURGEONS (general), pre-registration. Busy general base hospital for area. 8 residents. Full Consultant service. Excellent experience. Recognised for F.R.C.S. Married accommodation will be available for a joint post.

Applications to Group Secretary, General Hospital, Burton-on-Trent, Staffordshire.

**BURTON-ON-TRENT. THE GENERAL HOSPITAL.** HOUSE OFFICER (orthopædics) (pre-registration post) required at the above Hospital. Recognised for F.R.C.S.

Applications to Group Secretary as soon as possible.

**BURY AND ROSSENDALE HOSPITAL MANAGEMENT** COMMITTEE. Locum JUNIOR HOSPITAL MEDICAL OFFICER (E.N.T.) required for the period 26th January, 1959–2nd May, 1959. Post is based at Bury General Hospital, where accommodation can be provided, but the applicant will also be required to undertake duties with the Rochdale Hospital Management Committee.

Applications, stating full details and names of 2 referees, to Group Secretary, Bury General Hospital, Bury, Lancs.

**BURY AND ROSSENDALE HOSPITAL MANAGEMENT** COMMITTEE. BURY GENERAL HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER (medicine) at the above Hospital, falling vacant in mid-January.

Apply, stating full details and names of 2 referees, to H. WILKINSON, Group Secretary, Bury General Hospital, Bury, Lancs.

**CAERPHILLY DISTRICT HOSPITAL. (Acute General** Hospital—226 Beds. 6 miles from Cardiff.) RHYMNEY AND SIRHOWY VALLEYS HOSPITAL MANAGEMENT COMMITTEE. 2 HOUSE SURGEONS. 1st February. 1 with duties in Orthopædic Department; both recognised for F.R.C.S.

Applications to the Secretary.

**CAMBRIDGE. THE UNITED CAMBRIDGE HOSPITALS.** ADDENBROOKE'S HOSPITAL, CAMBRIDGE. HOUSE SURGEONS (2) for 6 months from 15th February, 1959. Recognised pre-registration service.

Apply to the Secretary by 10th January, stating age, nationality, qualifications and experience with dates, and with copies of 3 testimonials. Interviews late January.

**CAMBRIDGE. THE UNITED CAMBRIDGE HOSPITALS.** ADDENBROOKE'S HOSPITAL, CAMBRIDGE. HOUSE OFFICER (E.N.T. Department) for 6 months from 20th February, 1959. Pre-registration (surgical) or post-registration applications will be considered.

Apply to the Secretary by 10th January, stating age, nationality, qualifications and experience with dates, and with copies of 3 testimonials. Interviews late January.

**CANTERBURY. KENT AND CANTERBURY HOSPITAL.** (277 Beds.) The post of SENIOR HOUSE PHYSICIAN is now vacant. Salary £819 10s. p.a., with National Health Service conditions.

Applications, together with copies of 2 recent testimonials, to be addressed to the Hospital Secretary at the above Hospital.

**CARLUKE, LANARKSHIRE. LAW HOSPITAL. (790** Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (medical) for 1st February, 1959.

Applications, stating age, qualifications, and previous experience, together with the names of 2 referees, should be sent to the Group Medical Superintendent, Law Hospital, Carluke.

**CARMARTHEN. WEST WALES GENERAL HOSPITAL.** (280 Beds.) Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER in the Ophthalmic Department of the above Hospital. Immediate vacancy.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, should be sent to the Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

**CARMARTHEN. WEST WALES GENERAL HOSPITAL.** (280 Beds.) WEST WALES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (anæsthetics) which is now vacant. Salary and conditions of service as laid down by the Ministry of Health.

Applications, stating age, qualifications, experience, nationality, and names and addresses of 3 referees, to the Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

**CASTLEFORD, NORMANTON AND DISTRICT HOSPITAL,** HIGHTOWN, CASTLEFORD. RESIDENT CASUALTY OFFICER (Senior House Officer grade) required. Married accommodation available.

Apply immediately to the Secretary, Pontefract and Castleford Hospital Management Committee, Great Northern House, Salter Row, Pontefract, Yorkshire.

**CARDIFF (near). PRINCE OF WALES ORTHOPÆDIC** HOSPITAL, RHYDLAFAR, near CARDIFF. SENIOR HOUSE OFFICER required at above Hospital. Married or single accommodation available.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

**CARDIFF. ST. DAVID'S HOSPITAL.** Senior House OFFICER (resident) required in Geriatric Unit (200 Beds) at above Hospital.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

**CHELMSFORD HOSPITALS.** Applications are invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer) to large surgical units, commencing 1st February, 1959. The post is recognised for the D.A. and F.F.A. R.C.S.

Applications, stating age, qualifications and experience, with recent testimonials, should be sent to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

**CHESTER AND DISTRICT HOSPITAL MANAGEMENT** COMMITTEE. GROUP PATHOLOGICAL DEPARTMENT. Applications are invited for the post of SENIOR HOUSE OFFICER in Pathology, vacant now.

Applications, giving full details, together with the names and addresses of 2 referees, should be forwarded to the Hospital Secretary, Chester Royal Infirmary.

**CHESTER ROYAL INFIRMARY. Chester and District** HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident post of ANÆSTHETIST (Senior House Officer grade). The post is recognised for D.A.

Applications, giving full details, together with the names and addresses of 2 referees, should be forwarded to the Hospital Secretary.

**CHESTER ROYAL INFIRMARY. Chester and District** HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT CASUALTY OFFICER (Junior Hospital Medical Officer), vacant 31st January, 1959.

Applications, giving full details, together with the names and addresses of 2 referees, should be forwarded to the Hospital Secretary.

**CHICHESTER. ST. RICHARD'S HOSPITAL. Chichester** GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE PHYSICIAN at St. Richard's Hospital (400 Beds). Duties include care of general medical and paediatric beds and special duties on the Medical and Surgical Thoracic Unit. Post vacant mid-January.

Applications, stating age, qualifications and experience, and giving names of 2 persons to whom reference may be made, should be sent to the Administrative Officer.

**CHICHESTER. ST. RICHARD'S HOSPITAL. Chichester** GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for 2 HOUSE SURGEONS (recognised for pre-registration) for 6 months in the first instance. Posts vacant beginning and middle of February, 1959. Principally general surgery with some orthopaedic and traumatic surgery. Hospital recognised for F.R.C.S.

Applications, stating age, qualifications and experience, giving names of 2 persons from whom reference may be obtained, should be sent to the Administrative Officer.

**CHICHESTER. ST. RICHARD'S AND ROYAL WEST** SUSSEX HOSPITALS. Applications are invited for the post of RESIDENT OBSTETRIC AND GYNÆCOLOGY SENIOR HOUSE SURGEON, for 6 months in first instance. Obstetrics at St. Richard's (where resident) and gynæcology at both hospitals. Occasional relief duties at Maternity Hospital, Rustington (50 Beds). Salary £819 10s. less £150 p.a. for residence.

Apply Group Secretary, 174, Broyle-road, Chichester, giving names of 2 referees.

**COLCHESTER GROUP HOSPITAL MANAGEMENT** COMMITTEE. Applications invited for :—

**Essex County Hospital, Colchester, Essex** (181 Beds)

Post of SENIOR HOUSE OFFICER to Casualty and Radiotherapy Departments. Post tenable for 6 months or 1 year. Recognised for F.R.C.S.

**Essex County Hospital, Colchester. Colchester Maternity Hospital**

Post of Locum Tenens REGISTRAR (obstetrics and gynæcology) for period 29th December, 1958–8th January, 1959.

**Black Notley Hospital, Braintree, Essex** (522 Beds)

Post of HOUSE SURGEON. Pre-registration or third post. Includes duties in general surgical and gynæcological wards. Recognised for F.R.C.S. Tenable for 6 months.

**Clacton and District Hospital, Clacton-on-Sea, Essex** (58 Beds)

Post of SENIOR HOUSE OFFICER. Busy general hospital with regular outpatient sessions in all major specialties. Duties include medical, surgical, and casualty work, and the appointment offers practical all-round experience particularly useful to those entering general practice. Post tenable for 6 months or 1 year.

Applications, with copies of 3 testimonials, to Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

**CROMER AND DISTRICT HOSPITAL, Norfolk.** Applications are invited for the post of RESIDENT MEDICAL OFFICER (Senior House Officer status). Post vacant February, 1959, at a salary of £819 10s. p.a. in accordance with National Hospital service conditions. This is a busy general hospital of 52 Beds, with an outpatient Department where Consultants in all the major specialties hold regular sessions. The appointment thus offers practical experience of an all-round kind particularly useful to those contemplating entry into general practice. Residential accommodation is available and occupancy of a very adequate furnished flat at the hospital is a condition of employment in the case of a married man.

Applications, stating age, qualifications, experience, sex, and the names of 2 referees, should be addressed to the Secretary, Cromer and District Hospital, Mill-road, Cromer.

**CHESTERFIELD ROYAL HOSPITAL. House Physician** required mid-January. Post recognised for pre-registration purposes, and if desired, surgical posts can be offered after 6 months.

For further information, please apply to the Group Secretary.

**CHESTERFIELD ROYAL HOSPITAL. 2 House Surgeons** required mid-January. Posts recognised for pre-registration and F.R.C.S. purposes, and if desired medical posts can be offered after 6 months.

For further information, please apply to the Group Secretary.

**CHERTSEY, SURREY. ST. PETER'S HOSPITAL.** (Late Botley's Park War Hospital.) (440 Beds.) RESIDENT HOUSE SURGEON (intern) required. Post recognised for pre-registration service. Salary in accordance with terms and conditions of National Health Service. Post vacant now.

Applications, with names and addresses of referees, to Physician-Superintendent.

**CHERTSEY, SURREY. ST. PETER'S HOSPITAL. (Late** Botley's Park War Hospital.) (430 Beds.) Locum RESIDENT ANÆSTHETIC SENIOR HOUSE OFFICER required 5th–18th January.

Applications, with names of referees, to Physician-Superintendent.

**DERBY. CITY HOSPITAL. Derby Area No. 1 Hospital** MANAGEMENT COMMITTEE. Applications are invited for the post of OBSTETRIC HOUSE SURGEON (Senior House Officer or pre-registration). This post is recognised for the D.Obst.R.C.O.G. if held by a Senior House Officer. Vacant 1st February, 1959.

Applications, stating full details, together with copies of 2 recent testimonials, should be sent to the Medical Superintendent, City Hospital, Derby, as soon as possible.

**DERBY. DERBYSHIRE ROYAL INFIRMARY. Senior** HOUSE OFFICER (ophthalmology). Resident post. Recognised for F.R.C.S. (ophthalmology).

Apply, stating full details and 2 names for reference, to Secretary.

**DERBY. DERBYSHIRE ROYAL INFIRMARY. (416** Beds.) HOUSE PHYSICIAN (pre-registration) or SENIOR HOUSE OFFICER (general medicine). Vacant early January.

Apply, stating full details, with copies of 2 testimonials, to Secretary.

**DEWSBURY, YORKSHIRE. STAINCLIFFE GENERAL** HOSPITAL. (304 Beds.) The pre-registration appointment of HOUSE OFFICER (general surgery) falls vacant on 3rd January, 1959.

Applications, with full details, and quoting Ref. No. 10, should be sent to the Administrative Officer at the Hospital.

**DEWSBURY, YORKSHIRE. THE GENERAL HOSPITAL.** (128 Beds.) Applications are invited for the pre-registration post of HOUSE PHYSICIAN (general medicine and dermatology) which becomes vacant at the end of December.

Applications, giving full details, and quoting Ref. No. 10, should be sent to the Administrative Officer at the Hospital.

**DONCASTER ROYAL INFIRMARY. (330 Beds.)** Applications are invited for the post of RESIDENT ANÆSTHETIST in the grade of Senior House Officer. Post recognised under the regulations for the F.F.A. R.C.S. and D.A.

Applications, with copies of 2 recent testimonials, to the Group Secretary, Doncaster Hospital Management Committee, at Doncaster Royal Infirmary.

**DONCASTER ROYAL INFIRMARY. Applications are** invited for the post of SENIOR HOUSE OFFICER in Ophthalmology. Recognised for D.O.

Applications, with particulars of experience and copies of 2 recent testimonials, to the Group Secretary, Doncaster Hospital Management Committee, at Doncaster Royal Infirmary.

**DORCHESTER, DORSET. HERRISON HOSPITAL.** JUNIOR HOSPITAL MEDICAL OFFICER. This Hospital, which is situated in delightful country, invites application from a progressive young practitioner prepared to accept clinical responsibility. The Hospital is building a new admission block of most modern design and is expanding its activities. Facilities for attendance at Outpatient, Child Guidance and Neurological Clinics are available, and there are opportunities for original work. A small self-contained flat is available.

Applications, giving age, qualifications, experience, and the names of 2 referees, should be sent to the Medical Superintendent. The Hospital may be visited by appointment.

**DORKING GENERAL HOSPITAL, Dorking, Surrey.** Applications invited for post of SENIOR HOUSE OFFICER (general surgery, casualty, E.N.T.), vacant 1st February, 1959. Recognised for F.R.C.S. Married quarters available.

Apply, with testimonials, to Medical Superintendent.

**DOUGLAS. NOBLE'S ISLE OF MAN HOSPITAL. (160** Beds.) Applications are invited for pre-registration post of HOUSE SURGEON. Salary in accordance with Whitley scale. 4 residents on staff. Post vacant mid-January.

Apply to the Secretary, Noble's Hospital, Douglas, Isle of Man.

**DRIFFIELD, YORKSHIRE. EAST RIDING GENERAL** HOSPITAL. (247 Beds.) SENIOR HOUSE OFFICER (surgical). Vacant beginning January. Recognised for F.R.C.S. Good general experience; duties include general surgery with some gynæcology.

Detailed applications to Group Secretary, Westwood Hospital, Beverley, Yorkshire.

**DUNDEE ROYAL MENTAL HOSPITAL. (760 Beds.)** HOUSE OFFICER required for this teaching hospital from 1st February, 1959. Postgraduate education is arranged in association with the University of St. Andrews.

Applications, with the names of 2 referees, to the Physician-Superintendent, Gowrie House, Lyff, by Dundee.

**EAST GRINSTEAD, SUSSEX. QUEEN VICTORIA** HOSPITAL (Plastic Surgery and Jaw Injuries Centre). TUNBRIDGE WELLS GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications invited for resident appointment of SENIOR HOUSE OFFICER in Anæsthetics, vacant 1st February, 1959. Duties in anæsthesia for both general and plastic surgery. Post recognised for examinations of D.A. and F.F.A. R.C.S.

Apply, stating qualifications, experience, age, and names of 3 referees, to Group Secretary, Sherwood Park, Pembury-road, Tunbridge Wells, as soon as possible.

**EAST ANGLIAN REGIONAL HOSPITAL BOARD.**

(1) SENIOR REGISTRAR in Chest Medicine, Cambridge Area Chest Clinic. Applicants should have good experience in general medicine, special experience in chest diseases, and a higher qualification.

(2) REGISTRAR in Psychiatry, Hellesdon Hospital, Norwich. Associated with this modern mental hospital (970 Beds) are a separate early treatment hospital with an electroencephalographic department, outpatient clinics for both adults and children, and a special unit for the elderly mentally infirm. Post recognised for D.P.M. House available.

(3) REGISTRAR in Mental Deficiency and Child Psychiatry, Little Plumstead (near Norwich) Mental Deficiency Group of hospitals and Child Psychiatry Service. The group (1150 Beds) is the centre for much outpatient work, including child psychiatry clinics, and is recognised as a training centre for the D.P.M. by the Conjoint Board for 1 year. Comfortable flat (furnished or unfurnished) available.

Appointments (2) and (3) for 1 year, renewable for second year.

Applications, stating age, experience, and names of 3 referees, to Board's Senior Administrative Medical Officer, 117, Chesterton-road, Cambridge, by 12th January, 1959, for all 3 appointments.

Candidates are invited to visit hospitals: for appointments (2) and (3) by direct arrangement with the Medical Superintendent, and for appointment (1) by direct arrangement with the Consultant Chest Physician, Chest Clinic, Castle Hill, Cambridge.

**EDGWARE GENERAL HOSPITAL, Edgware, Middlesex.** RESIDENT OBSTETRIC HOUSE SURGEON for above Hospital. Post vacant 6th February, 1959, and recognised for M.R.C.O.G. purposes. 6-month appointment.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Administrator of Hospital by 10th January, 1959.

**EDGWARE GENERAL HOSPITAL, Edgware, Middlesex.** RESIDENT GYNÆCOLOGICAL HOUSE SURGEON for above Hospital. Post vacant 29th January, 1959, and recognised for M.R.C.O.G. purposes. 6-month appointment.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Administrator of Hospital by 10th January, 1959.

**EDGWARE GENERAL HOSPITAL. Junior Hospital** MEDICAL OFFICER, non-resident, required in the Casualty Department at Edgware General Hospital (704 Beds).

Apply, stating age, nationality, qualifications, and giving details of experience, together with the names and addresses of 2 referees, to Group Secretary, Edgware General Hospital, Edgware, Middlesex, by 3rd January, 1959.

**EPPING. ST. MARGARET'S HOSPITAL. House** SURGEON (pre- or post-registration) to very busy General Surgical Unit. Post recognised for F.R.C.S. Vacant 15th January, 1959. Hospital within easy reach of Central London.

Applications immediately, with copies of testimonials, including 1 from medical school, to the Group Secretary, Epping Group Hospital Management Committee, Oak Cottage, The Plain, Epping, Essex.

**EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom,** SURREY. RESIDENT HOUSE PHYSICIAN required 1st February. Fully registered post. Duties at above Hospital and Annexes include general medicine, geriatrics, paediatrics, and dermatology.

Applications, stating age, qualifications and experience, with copies of 2 recent testimonials, should be sent as soon as possible to Group Secretary at above address.

**EPSOM, SURREY. ST. EBBA'S HOSPITAL. St. Ebba's** AND BELMONT GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of SENIOR REGISTRAR at above Hospital. The Hospital (865 Beds) is principally concerned with the treatment of voluntary cases of good prognosis and has over 1300 admissions annually. There are full facilities for psychological and physical investigations, and all modern treatment methods are used. The Hospital has outpatient departments and a special unit for juvenile psychiatric cases. Full residential amenities are available. Candidates should possess the D.P.M. Candidates may visit the Hospital by appointment with the Physician-Superintendent.

Application forms may be obtained from the Group Secretary, St. Ebba's and Belmont Group Hospital Management Committee, Group Office, Belmont Hospital, Brighton-road, Sutton, Surrey, and completed forms should be returned to him within 2 weeks of the appearance of this advertisement.

**GALASHIELS (near). PEEL HOSPITAL. (220 general** beds. Full Consultant staff.) Applications are invited for the following vacancy. Orthopædic Department—1 RESIDENT SENIOR HOUSE OFFICER. Conditions of service in accordance with regulations for National Health Service staff.

Applications, giving full particulars and names of 2 referees, to Group Medical Superintendent, Borders Hospitals Board of Management, Peel Hospital, near Galashiels. Opportunity to visit Hospital arranged on application.

**GLASGOW. BELVIDERE HOSPITAL, London-road,** GLASGOW, E.1. 2 HOUSE OFFICERS required for 1st February, 1959. Appointments are for 6 months. Post-registration or pre-registration posts in medicine.

Applications, with names of 2 referees, should be sent to the Physician-Superintendent, Belvidere Hospital, London-road, Glasgow, E.1.

**GRIMSBY GENERAL HOSPITAL. Applications are** invited for the post of HOUSE SURGEON (gynæcology) (pre-registration or Senior House Officer grade) with some relief obstetric duties. Senior House Officer post recognised for M.R.C.O.G. Up-to-date medical library and reading facilities available.

Apply, with 2 names for reference, to Hospital Secretary, Grimsby General Hospital, Grimsby.

**HALIFAX. ROYAL HALIFAX INFIRMARY. (301 Beds.)** HOUSE PHYSICIAN required. Post vacant 1st January, 1959.

Apply to Secretary, Royal Halifax Infirmary, Halifax.

**HALIFAX. ROYAL HALIFAX INFIRMARY. (301 Beds.)** HOUSE SURGEON required for E.N.T./Eye duties. Post vacant now.

Apply to Secretary, Royal Halifax Infirmary, Halifax.

**HAREFIELD HOSPITAL. Harefield, Middlesex. North** WEST METROPOLITAN REGIONAL HOSPITAL BOARD. MEDICAL REGISTRAR in Chest Medicine required at above Hospital to work on wards for the treatment of tuberculosis in all its forms and for the treatment of non-tuberculous respiratory diseases. Candidates will be required to have had a wide experience in General Medicine. The Hospital has 360 Beds for tuberculosis, 40 for non-tuberculous respiratory diseases, 90 Beds for thoracic surgery, 100 Beds for general medicine and general surgery. The appointment affords ample opportunity for candidates working for higher medical degrees.

Application forms obtainable from and returnable to the Group Secretary, Harefield and Northwood Group Hospital Management Committee, Mount Vernon Hospital, Northwood, Middlesex, by 10th January, 1959.

**HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (146** Beds.) Applications are invited for the pre-registration post of HOUSE SURGEON for General Surgery. The Hospital is the main surgical unit in the Group with a resident staff of 4. The post is recognised for F.R.C.S., for which it offers excellent experience. The appointment is for 6 months and falls vacant on 12th January, 1959.

Applications, stating age, nationality, qualifications and experience, with copies of 3 recent testimonials or the names of 2 referees, should be submitted to the Administrator as soon as possible.

**HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (146** Beds.) Applications are invited for the pre-registration post of HOUSE SURGEON for General Surgical and Urological Surgery. The Hospital is the main surgical unit in the Group with a resident staff of 4. The post is recognised for F.R.C.S., for which it offers excellent experience. The appointment is for 6 months and falls vacant in mid-January.

Applications, stating age, nationality, qualifications and experience, with copies of 3 recent testimonials, or the names of 2 referees, should be submitted to the Administrator, as soon as possible.

**HASTINGS. ST. HELEN'S HOSPITAL. (491 Beds.)** HOUSE SURGEON required. Pre-registration post, recognised for F.R.C.S. Resident staff of 5. Now vacant.

Applications immediately to Hospital Administrator.

**HEMEL HEMPSTEAD, HERTFORDSHIRE. WEST** HERTS HOSPITAL. 2 HOUSE SURGEONS (pre-registration) required. Posts vacant January.

Applications, giving full details and 2 names for reference, should be sent to the Hospital Secretary as soon as possible.

**HEMEL HEMPSTEAD. ST. PAUL'S AND WEST HERTS** HOSPITALS. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR in Clinical Pathology required at above Hospitals. Post now vacant. Hospitals may be visited by direct appointment.

Application form obtainable from and returnable to Secretary, West Herts Group Hospital Management Committee, 9, Rickmansworth-road, Watford, Hertfordshire.

**HEREFORD GENERAL HOSPITAL. (154 Beds.) Locum** HOUSE OFFICER (medicine) required from 30th December to 19th January.

Applications, with copies of 2 testimonials, to be sent to the Administrative Officer, General Hospital, Hereford.

**HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital** situated 21 miles from London.) Applications are invited for the appointment of HOUSE SURGEON (general, first or second post), to commence 19th January, 1959. Pre-registration post, recognised under F.R.C.S. regulations. Applications will also be considered from fully registered practitioners.

Applications to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

**HULL A GROUP HOSPITAL MANAGEMENT COM-**MITTEE. HOUSE PHYSICIAN, Paediatric Unit. Duties at Victoria Children's Hospital for 3 months followed by 3 months on the paediatric wards, Western General Hospital. An interesting and varied post which includes outpatient and casualty work. This appointment, which commences on 1st February, 1959, is recognised for the D.C.H.

Apply, giving experience, testimonials, &c., to the Secretary, Victoria Hospital for Sick Children, Park-street, Hull.

**HUDDERSFIELD ROYAL INFIRMARY. (285 Beds.)** HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required to commence duty immediately. The post is recognised as a pre-registration appointment and for the F.R.C.S. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Group Secretary,
Huddersfield Hospital Management Committee,
The Royal Infirmary, Huddersfield.

**HUDDERSFIELD ROYAL INFIRMARY. Huddersfield** HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from provisionally registered medical practitioners for the post of HOUSE SURGEON to the Princess Royal Maternity Home (57 Beds) to commence duty on 1st February, 1959. The holder of the post, which is recognised for the D.Obst.R.C.O.G., will have access to the abnormal maternity and gynæcological beds at The Royal Infirmary. The Department is under the control of 2 Consultant Obstetricians and Gynæcologists. Salary in accordance with national scale.

Applications, with copies of 3 recent testimonials, to be addressed to the undersigned.

H. J. JOHNSON, Secretary to the Management Committee.
The Royal Infirmary, Huddersfield.

**HUDDERSFIELD ROYAL INFIRMARY.** (285 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE PHYSICIAN to commence duties on 23rd January, 1959. The post is recognised as a pre-registration appointment. Salary in accordance with national scales.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON,
Group Secretary to the Management Committee.
The Royal Infirmary, Huddersfield.

**HOUNSLOW HOSPITAL, Staines-road, Hounslow,** MIDDLESEX. (75 Beds—general acute.) STAINES GROUP HOSPITAL MANAGEMENT COMMITTEE. Locum RESIDENT SURGICAL REGISTRAR required for 4 weeks from Monday, 5th January, 1959.

Applications to the Secretary.

**IPSWICH AND EAST SUFFOLK HOSPITAL (Anglesea-**ROAD WING). (350 Beds.) Applications invited for SENIOR HOUSE OFFICER to Fracture and Orthopædic Department. Post recognised for F.R.C.S. examinations. The Department has about 60 Beds and a large outpatient attendance, offering wide experience.

Applications, stating age, nationality and experience, together with copies of recent testimonials, to Hospital Secretary.

**IPSWICH AND EAST SUFFOLK HOSPITAL (Heath-**ROAD WING). (280 Beds.) HOUSE SURGEON (pre-registration) to General Surgeons.

Applications, with full details and copies of 3 recent testimonials, to Hospital Secretary.

**IPSWICH. ST. HELEN'S HOSPITAL.** (129 Beds for infectious diseases, pulmonary tuberculosis, long-stay orthopædics and geriatrics. The area Chest Clinic is in the Hospital.) HOUSE PHYSICIAN required (Senior House Officer grade). Accommodation available for married man.

Applications to JOHN WILLIAMS, Group Secretary, Ipswich Group Hospital Management Committee, at Broughton House, Broughton-road, Ipswich.

**KENDAL. WESTMORLAND COUNTY HOSPITAL.** JUNIOR HOSPITAL MEDICAL OFFICER (surgical) required in the Surgical Unit. The post offers excellent experience in general surgery. The successful candidate will also be expected to participate in the general work of the Hospital. Salary will be determined by applicant's present post and previous service.

Full particulars, stating age, experience, and qualifications, with names of 2 referees, should be forwarded to the Group Secretary, Royal Lancaster Infirmary, Lancaster.

**KETTERING AND DISTRICT GENERAL HOSPITAL,** NORTHAMPTONSHIRE. Applications are invited for the post of HOUSE SURGEON (pre-registration) vacant now. Post recognised for F.R.C.S.

Applications, stating age, experience and qualifications, together with copies of 3 recent testimonials, to be sent to the Group Secretary at the above address.

**KETTERING GENERAL HOSPITAL, Kettering.** Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER in Pædiatrics, vacant 1st January, 1959. Post recognised for D.C.H.

Applications, together with copies of 3 recent testimonials, should be sent to the Group Secretary as soon as possible.

**KETTERING GENERAL HOSPITAL, Kettering.** (144 Beds.) Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER in Anæsthetics, vacant now. Post recognised for D.A.

Applications, giving details of qualifications and experience, and enclosing copies of 3 recent testimonials, to be sent to the Group Secretary, Kettering and District Hospital Management Committee, at the above address.

**LINCOLN COUNTY HOSPITAL.** (200 Beds. Recognised for training for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time Male or Female RESIDENT SURGICAL REGISTRAR required 7th March. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 5th January, 1959, giving age, nationality, qualifications, present and previous appointments, with dates, naming 3 referees.

**LINCOLN COUNTY HOSPITAL, Sewell-road, Lincoln.** (200 Beds.) Applications are invited from Men and Women for 2 posts of RESIDENT HOUSE SURGEON. These are approved pre-registration posts which will be vacant on 23rd January and 15th February, 1959, respectively. The duties are with General Surgeons. If satisfactory, candidates will be appointed for a second 6 months as House Physicians.

Applications, with copy testimonials, should be sent to the Group Secretary, Lincoln County Hospital, as soon as possible.

**LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS.** LIVERPOOL REGIONAL HOSPITAL BOARD. Applications are invited for a post of SENIOR REGISTRAR in Pædiatrics for the period to 30th September, 1959. The successful candidate will be eligible to apply for reappointment for a further period. The duties of the appointment are at the Royal Liverpool Children's Hospital and the Alder Hey Children's Hospital.

Apply by 16th January on form obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

**LEEDS. THE UNITED LEEDS HOSPITALS. The** GENERAL INFIRMARY AT LEEDS. REGISTRAR in Urology required for a period of 1 year in the first instance. Renewable for second year. Post offers good experience either to candidates having already embarked upon training in general surgery or to those who wish to specialise in urology. Whitley conditions of service apply.

Applications, stating age, experience, qualifications, previous posts, with dates, and 3 names for reference, should be sent to the Sub-Dean, The Medical School, Leeds, 2, by not later than 1st January, 1959.



**LEEDS. THE UNITED LEEDS HOSPITALS. The** GENERAL INFIRMARY AT LEEDS. Applications are invited for the post of REGISTRAR in the Department of Psychiatry (Leeds University) to work at the General Infirmary at Leeds. Some previous experience of psychiatry necessary. Opportunities are available for study for a higher degree.

Applications, including 3 names for reference, to be sent to the Sub-Dean, The School of Medicine, Leeds, 2, not later than 1st January, 1959.

**LEEDS. THE UNITED LEEDS HOSPITALS. The** GENERAL INFIRMARY AT LEEDS. Applications are invited for the post of HOUSE SURGEON (pre-registration) to the Genito-urinary Department. Applications will be considered from candidates who have completed pre-registration, in which case the post will be paid at Senior House Officer level.

Applications, stating age, qualifications, experience, and 3 names for reference, to be sent to the Secretary to the Board, The General Infirmary, Leeds, 1, as soon as possible.

**LEEDS, 7. CHAPEL ALLERTON HOSPITAL.** (233 Beds.) REGISTRAR (medical) required whole-time. National Health Service terms and conditions.

Detailed applications (4 copies), giving nationality, date of birth, qualifications and experience, present appointments and names of 3 referees, should reach Ministry of Health, Division 4 (V), Norcross, Blackpool, Lancashire, by 17th January, 1959.

**LEEDS REGIONAL HOSPITAL BOARD. Registrar** vacancies.

*Anæsthetics*

Hull A, Hull B, and East Riding Groups. Recognised for the F.F.A. R.C.S. Duties may include thoracic anæsthesia. Non-resident.

*General Medicine*

Regional Rheumatism Centre, Harrogate—240 Beds (9 sessions), and Rheumatism Clinic, General Infirmary, Leeds (2 sessions). Resident at the Royal Bath Hospital, Harrogate.

*General Surgery*

(i) Hull Royal Infirmary (80 general surgical beds) and other hospitals in the Hull A Group. Resident. Married accommodation available.

(ii) Bradford Royal Infirmary. One of 2 similar posts (90 general surgical beds). Resident or non-resident. Recognised for the F.R.C.S.

*Geriatrics*

Bradford A and B Groups. Work primarily with Consultant Geriatrician in the Admission Unit at St. Luke's Hospital with additional duties at Thornton View Hospital. Offers excellent experience of an area geriatric service. Aggregate of 681 Beds.

*Infectious Diseases*

Leeds Road Hospital, Bradford (120 infectious diseases beds). Accommodation for a single person only.

*Obstetrics and Gynæcology*

Hull A Group (81 obstetrical and 91 gynæcological beds). Recognised for M.R.C.O.G. Resident.

*Ophthalmology*

Bradford A Group. (34 eye beds and 5000 new outpatients annually). Non-resident.

*Orthopædic Surgery*

(*a*) Bradford A Group Orthopædic Department. Offers excellent training in all branches of accident and orthopædic surgery. Resident—detached furnished house, suitable for married person; also single accommodation available.

(*b*) Harrogate General Hospital (total beds 253—38 orthopædic beds). A small detached house is expected to become available for rental shortly.

*Psychiatry*

(*a*) Storthes Hall Hospital, Huddersfield (2750 Beds). Resident.

(*b*) Broadgate Hospital, Beverley (650 Beds). Resident. Accommodation for single person only.

(*c*) Clifton Hospital, York (1100 Beds). Resident or non-resident.

(*d*) Naburn and Bootham Park Hospitals, York (614 Beds). Duties principally at Bootham Park. Accommodation for single person. Resident or non-resident.

Applications, stating age, qualifications, and details of present and previous appointments, with dates, together with the names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 7th January, 1959.

**LEAMINGTON SPA. WARNEFORD GENERAL HOS-**PITAL. (211 Beds.) CASUALTY OFFICER (Senior House Officer) Male or Female, preferably resident, and suitable for one reading for higher qualifications, being recognised for F.R.C.S., affording contact with all Specialist Units in the Hospital. Post vacant 28th January, 1959.

Applications, with names and addresses of 3 referees, to Hospital Secretary.

**LICHFIELD. ST. MATTHEW'S HOSPITAL, Burntwood,** LICHFIELD, STAFFORDSHIRE. (1330 mental beds.) BURTON-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER (psychiatry) required. Resident accommodation available. This is a modern mental hospital undertaking all forms of treatment and providing facilities for taking the D.P.M.

Applications, with 2 references, to the Medical Superintendent.

**LOUTH, LINCOLNSHIRE. COUNTY HOSPITAL.** (215 Beds.) GRIMSBY HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident post of SENIOR HOUSE OFFICER (medical), vacant 24th February, 1959, at this busy General Hospital.

Applications, with full details, together with names of 2 referees, should be addressed to the Hospital Secretary.

**MAIDENHEAD HOSPITAL, Berkshire.** Applications invited from fully registered practitioners for post of SENIOR HOUSE OFFICER (medical) for Maidenhead General Hospital with duties at St. Mark's and Isolation Hospitals, Maidenhead. Appointment for 1 year commencing mid-January.

Applications, giving qualifications, experience, nationality and age, with 3 testimonials or names of 3 referees, to Secretary.

**MAIDENHEAD HOSPITAL, Berkshire.** Applications invited for post of HOUSE SURGEON vacant mid-January. Pre-registration post.

Applications, stating age, qualifications and nationality, with names of 3 referees, to Secretary.

**MAIDSTONE. WEST KENT GENERAL HOSPITAL.** (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the pre-registration post of HOUSE SURGEON. 6 months' appointment. Vacant 3rd January, 1959. Recognised for F.R.C.S. Salary at the rate of £467 10s.–£577 10s. p.a. A deduction at the rate of £125 a year is made for board and lodging, and other services provided.

Applications should be forwarded, as soon as possible, to the Administrative Officer at the Hospital.

**MAIDSTONE. WEST KENT GENERAL HOSPITAL.** (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the pre-registration post of HOUSE PHYSICIAN. 6-month appointment. Post vacant mid-February, 1959. Salary at the rate of £467 10s.–£577 10s. p.a. A deduction at the rate of £125 a year is made for board and lodging, and other services provided.

Applications should be forwarded, as soon as possible, to the Administrative Officer at the Hospital.

**MIDDLESBROUGH GENERAL HOSPITAL, Ayresome** Green-lane, MIDDLESBROUGH. (305 Beds.) SOUTH TEES-SIDE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER (orthopædics) at the above Hospital. The post is recognised for the F.R.C.S. examination and includes some duties in the Casualty Department, which is under the supervision of a full-time Senior Casualty Officer.

Applications, stating age, qualifications and experience, together with 2 names for reference, should be sent to the Hospital Secretary as soon as possible.

**MIDDLESBROUGH GENERAL HOSPITAL, Ayresome** Green-lane, MIDDLESBROUGH. (305 Beds.) SOUTH TEES-SIDE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER (general surgery) at the above Hospital. The post is recognised for the F.R.C.S. examination and includes some duties in the Casualty Department which is under the supervision of a full-time Senior Casualty Officer.

Applications, stating age, qualifications and experience, together with 2 names for reference, should be sent to the Hospital Secretary.

**MANCHESTER. UNITED MANCHESTER HOSPITALS.** SENIOR REGISTRAR in Ophthalmology to commence on 23rd March, 1959. Whole-time, non-resident appointment for 12 months, renewable. The successful candidate will be attached initially to the University Unit at the Manchester Royal Eye Hospital but may later be required to rotate to the other Units in the Hospital.

Application form, obtainable from the undersigned, to be returned by 10th January, 1959.

A. B. SCOTT, Secretary to the Board of Governors.

United Manchester Hospitals, Manchester, 13.

**MANCHESTER. UNITED MANCHESTER HOSPITALS.** SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of SENIOR HOUSE OFFICER in Obstetrics for 12 months from 1st February, 1959. Previous hospital experience in general medicine and surgery and in obstetrics necessary. Recognised for M.R.C.O.G. examination. Duties involve clinical responsibility for mothers and babies and supervision of work of pre-registration House Officers. National scales.

Application forms from the undersigned, to be returned by 9th January, 1959.

A. R. WISE, General Superintendent, Saint Mary's Hospitals. Whitworth Park, Manchester, 13.

**MANCHESTER VICTORIA MEMORIAL JEWISH HOSPITAL.** (Acute—104 Beds) (non-sectarian). Applications are invited for the post of HOUSE OFFICER (surgery). Vacant 15th January, 1959.

Applications, quoting Lan/4 and the names of 2 referees, by 7th January, 1959, to the Group Secretary, North Manchester Hospital Management Committee, Crumpsall Hospital, Manchester, 8.

**MANCHESTER, 20. WITHINGTON HOSPITAL.** South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade). Previous experience in pathology not essential, the post affording opportunities for gaining experience in all branches of clinical pathology.

Applications, stating age, qualifications, present post, experience, and the names of 2 referees, to be forwarded to the Group Secretary, Withington Hospital, Manchester, 20.

**MANCHESTER REGIONAL HOSPITAL BOARD** invites applications for the post of RESIDENT REGISTRAR in General Surgery, vacant 15th January, 1959. The duties will be with the Stockport and Buxton Hospital Management Committee as Resident Surgical Officer at Stockport Infirmary.

Applications, stating age, experience, and qualifications, together with the names of 2 referees, to the Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw Heath, Stockport.

**MANCHESTER REGIONAL HOSPITAL BOARD.** Senior REGISTRAR in Chest Diseases to the Unit based on Manchester. Appointee will have duties at the Manchester Chest Clinic, Baguley (Chest) Hospital (which has a major thoracic surgery unit), and Monsall Hospital (142 tuberculous and non-tuberculous medical beds, including 24 for pre- and post-operative thoracic surgery cases), and the Manchester Northern Hospital (non-tuberculous outpatients). M.R.C.P. desirable. Temporary accommodation may be available at Monsall Hospital for single person.

Application forms from the Senior Administrative Medical Officer to the Board, Cheetwood-road, Manchester, 8, to be returned by 7th January, 1959.

**MANCHESTER REGIONAL HOSPITAL BOARD.** Applications are invited for the appointment of REGISTRAR in E.N.T. Surgery (resident or non-resident). Post vacant 1st February, 1959. Recognised for F.R.C.S. and D.L.O.

Applications, stating age, nationality, qualifications, experience, and the names of 2 referees, should be sent immediately to Group Secretary, Bolton and District Hospital Management Committee, The Royal Infirmary, Bolton.

**MANCHESTER REGIONAL HOSPITAL BOARD.** South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. The Board invite applications for the post of REGISTRAR in E.N.T. Surgery in the South Manchester Group, with principal duties at the Manchester Ear Hospital and Wythenshawe Hospital.

Applications, stating age, qualifications, present post, and names of 2 referees, to be forwarded to the Group Secretary, Withington Hospital, Manchester, 20, immediately.

**NANTWICH, CHESHIRE. BARONY HOSPITAL.** REGISTRAR in Medicine required in February, 1959. This post is mainly for general medicine but offers experience in pædiatrics and geriatrics. Whitley Council salary and conditions.

Applications, stating age, qualifications, experience, &c., together with names of 3 referees, to be submitted to the Group Secretary, Group Headquarters, Barony Hospital, Nantwich, by 3rd January, 1959.

**NELSON. REEDYFORD MEMORIAL HOSPITAL.** (95 Beds.) RESIDENT HOUSE OFFICER (surgical). The post is recognised for F.R.C.S. Modern self-contained flat is available which provides excellent accommodation for a single or married applicant.

Applications, with 2 references, to Group Secretary, Burnley and District Hospital Management Committee, Burnley General Hospital.

**NEWBURY DISTRICT HOSPITAL, Newbury, Berkshire.** (90 Beds.) SENIOR HOUSE OFFICER (mainly general surgery with some casualty). Post vacant 1st March, 1959. A ground-floor flat, suitable for a married person, is available.

Applications, giving full details, with 3 names for reference, to Group Secretary, Reading and District Hospital Management Committee, 3, Craven-road, Reading.

**NEWCASTLE GENERAL HOSPITAL. (835 Beds.)** SENIOR HOUSE OFFICER required for the Psychiatric Unit (54 Beds), post vacant now. The Unit is under the clinical direction of the Department of Psychological Medicine, King's College Medical School, University of Durham. The post is recognised for the purpose of study for the D.P.M.

Applications, together with names and addresses of 2 referees, should be sent, as soon as possible, to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle, 4.

**NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL.** Applications are invited for the post of HOUSE SURGEON to the Gynæcological Department of 25 Beds. This appointment is recognised for the M.R.C.O.G., and may be a pre-registration appointment. Vacant 1st February, 1959.

Applications, accompanied by 2 testimonials, should be forwarded to the Resident Medical Officer, Mount Vernon Hospital, Northwood, Middlesex, by 14th January, 1959.

**NORWICH. UNITED NORWICH HOSPITALS.** Applications are invited for the following appointments vacant 1st February, 1959. All are pre-registration posts:—

(1) **Norfolk and Norwich Hospital, Norwich**

HOUSE SURGEON (2). Post recognised for final F.R.C.S. examination requirements. Duties entirely general surgical.

JUNIOR CASUALTY OFFICER. 2 Casualty Officers employed in the department.

OBSTETRIC HOUSE SURGEON. 2 House Officers employed in the department.

JUNIOR ORTHOPÆDIC HOUSE SURGEON. 2 Orthopædic House Officers employed in the department.

(2) **Jenny Lind Hospital for Children, Norwich**

HOUSE SURGEON at this Hospital which forms the entire Pædiatric Department of the United Norwich Hospitals. The duties are under the direct supervision of the Consultant staff of the Norfolk and Norwich Hospital.

(3) **West Norwich Hospital, Norwich**

HOUSE PHYSICIAN. Duties include medical and geriatrics. The beds at this Hospital are under the control of the Consultant Physicians of the Norfolk and Norwich Hospital, and the successful candidate will be required to undertake medical duties under their supervision.

HOUSE SURGEON (2). Post recognised for final F.R.C.S. examination requirements. Duties general surgical and including burns and plastic work. The beds at this Hospital are under the control of the Consultant staff of the Norfolk and Norwich Hospital.

(4) **Norfolk and Norwich Hospital, Norwich**

Applications are also invited for the following appointments vacant 1st February, 1959:—

SENIOR OBSTETRIC HOUSE SURGEON. Senior House Officer status. 2 House Officers employed in the department. Post recognised for final D.Obst.R.C.O.G. examination requirements.

SENIOR ORTHOPÆDIC HOUSE SURGEON. Senior House Officer status, 2 Orthopædic House Officers employed in the department. Post recognised for final F.R.C.S. examination requirements.

Membership of a Medical Defence Society is a condition of appointment in each case.

Applications, giving full details with names of 2 referees, to Group Secretary, Hospital Management Committee, St. Stephen's-road, Norwich, by 5th January, 1959.

**NOTTINGHAM GENERAL HOSPITAL.** Senior House OFFICER (anæsthetics) required about 1st January, 1959. The post is recognised for the D.A. and the F.F.A. R.C.S. This is a busy general hospital, giving experience in all branches of surgery.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Group Secretary.

**NOTTINGHAM GENERAL HOSPITAL.** Pre-registration HOUSE SURGEONS required. Duties to commence end January/beginning February, 1959.

Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent to Group Secretary.

**NOTTINGHAM GENERAL HOSPITAL.** Senior House OFFICER (orthopædic and fracture) or Locum required. Duties to commence early January, 1959. Post offers exceptional experience in traumatic surgery.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Group Secretary.

**NOTTINGHAM GENERAL HOSPITAL.** Senior House OFFICER (surgery) required. Duties to commence about 19th January, 1959.

Applications, stating age, qualifications, experience and nationality, together with copies of testimonials, to be sent to the Group Secretary, General Hospital, Nottingham.

**NOTTINGHAM GENERAL HOSPITAL.** Resident Pre-registration HOUSE PHYSICIANS required. Posts vacant mid-January, 1959, and early February, 1959.

Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent to Group Secretary.

**NOTTINGHAM GENERAL HOSPITAL. E.N.T. Department.** A SENIOR HOUSE OFFICER (E.N.T.) required at the above Hospital. This post is recognised for the D.L.O. and F.R.C.S. examinations. Salary and conditions of service in accordance with Ministry regulations. Duties to commence as soon as possible.

Applications, stating age, qualifications, experience, and nationality, together with copies of testimonials, to be sent to the Group Secretary.

**NOTTINGHAM GENERAL HOSPITAL.** Applications are invited for the post of SENIOR HOUSE OFFICER (casualty). Duties to commence as soon as possible.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Secretary, General Hospital, Nottingham.

**NOTTINGHAM CHILDREN'S and CITY HOSPITALS.** (880 Beds. Post recognised for training for D.C.H.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (pediatrics) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 5th January, 1959, giving age, nationality, qualifications, present and previous appointments, with dates, naming 3 referees.

**NOTTINGHAM. FIRS MATERNITY HOSPITAL.** (40 Beds.) Required RESIDENT SENIOR HOUSE OFFICER (obstetrics), post vacant early February, 1959. Recognised for D.Obst.R.C.O.G. Previous experience in obstetrics an advantage.

Applications, with copies of 3 testimonials, to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

**NOTTINGHAM. HIGHBURY HOSPITAL, Bulwell,** NOTTINGHAM. Applications are invited from fully qualified medical practitioners for the post of SENIOR HOUSE OFFICER (obstetrics) in the Obstetrical and Gynæcological Departments (48 obstetrical beds, 11 gynæcological beds, and a small block for puerperal pyrexia). This Hospital is recognised for training for the membership and diploma in obstetrics examinations. Duties to commence on 1st January, 1959. Preference will be given to candidates who have experience in obstetrics and gynæcology. Terms and conditions of service as laid down by the Ministry of Health.

Apply, stating age, qualifications, and experience, together with copies of testimonials, to Hospital Secretary.

**NUNEATON. GEORGE ELIOT HOSPITAL.** House OFFICER in General Surgery. Recognised pre-registration and F.R.C.S. Resident.

Applications to Hospital Secretary, George Eliot Hospital, Nuneaton.

**NUNEATON. MANOR HOSPITAL.** Senior House Officer in Anæsthetics. Resident or non-resident. Recognised D.A., F.F.A. R.C.S.

Applications to Hospital Secretary.

**OXFORD REGIONAL HOSPITAL BOARD.** Locum SENIOR REGISTRAR in Psychiatry at St. John's Hospital, Stone, near Aylesbury, required for 3 months from 1st January, 1959.

Applications, with names of 2 referees, to the Secretary, 43, Banbury-road, Oxford.

**PAISLEY. ROYAL ALEXANDRA INFIRMARY.** House SURGEONS (general surgery), pre-registration. 2 posts will become vacant on 1st February, 1959.

Applications to Group Medical Superintendent.

**PAISLEY AND DISTRICT HOSPITALS MATERNITY** UNIT. HOUSE SURGEONS (obstetrics and gynæcology), pre-registration. 2 posts will become vacant on 1st February, 1959.

Applications to Group Medical Superintendent, Royal Alexandra Infirmary, Paisley.

**PRESTON ROYAL INFIRMARY. (409 Beds.) Preston** AND CHORLEY HOSPITAL MANAGEMENT COMMITTEE. Post- or pre-registration HOUSE SURGEON. Post vacant mid-January, 1959. Recognised for F.R.C.S.

Applications, with names of 2 referees, to Group Secretary, Royal Infirmary, Preston, Lancs.

**PRESTON ROYAL INFIRMARY. (409 Beds.) Preston** AND CHORLEY HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER in Neurosurgery. Post recognised for F.R.C.S. Vacant early January, 1959.

Applications, with names of 2 referees, to Group Secretary, Royal Infirmary, Preston, Lancashire.

**PENARTH, GLAMORGANSHIRE. LLANDOUGH HOSPITAL.** Medical Research Council Pneumoconiosis Research Unit. Applications are invited for the following :—

1. RESEARCH REGISTRAR. Salary from £1200 to £1365 p.a. according to qualifications and experience; for 2 years in the first place. A joint appointment with the Miners' Chest Diseases Treatment Centre (National Health Service). Good opportunity for clinical work in chest disease and research in treatment and pulmonary physiology.

2. REGISTRAR. Salary from £935 to £1061 10s. p.a. according to qualifications and experience. 2 years. Clinical and research to assist in pulmonary physiological studies in the laboratory and field.

Write full details to Dr. J. C. GILSON, Director of the Unit at Llandough Hospital, Penarth, Glam.

**PERTH. COUNTY AND CITY OF PERTH GENERAL** HOSPITALS. The following House Officer posts will fall vacant on 1st February, 1959 :—

**Bridge of Earn Hospital**

*1 SENIOR HOUSE SURGEON (Fracture and Orthopædic Unit).
* 3 HOUSE SURGEONS (Fracture and Orthopædic Unit).
* 3 HOUSE SURGEONS (general surgical wards).
† 1 HOUSE SURGEON or SENIOR HOUSE SURGEON (E.N.T. ward).
1 SENIOR HOUSE PHYSICIAN (general medical wards).

**Perth Royal Infirmary**

* 1 HOUSE SURGEON (general surgical wards).
* 1 HOUSE SURGEON or SENIOR HOUSE SURGEON (casualty).

*Notes* :—

1. Senior House Officer posts are normally tenable for 12 months and Junior House Officer posts for 6 months.

2. All Junior House Officer posts are recognised for pre-registration hospital service.

3. Posts marked * are recognised by the Royal College of Surgeons under the regulations for the F.R.C.S.

4. Post marked † is recognised under the regulations for the D.L.O.

Applications, giving age, qualifications, experience, and names of 2 referees, should be sent to the Group Medical Superintendent, Perth Royal Infirmary, Perth.

**PLYMOUTH. SOUTH DEVON AND EAST CORNWALL** HOSPITAL.

HOUSE SURGEON, pre-registration post, vacant immediately. Devonport Section.

HOUSE SURGEONS, pre-registration posts, vacancies, 2 on 1st January, 1959. Freedom Fields Section.

HOUSE SURGEONS, pre-registration posts, vacancies 1 immediately, and 9th January, 1959. Greenbank-road Section.

All posts are recognised for the F.R.C.S.

Apply with names of 3 referees, also stating age, nationality, qualifications and experience, to the Group Secretary, 7, Nelson-gardens, Plymouth.

**PLYMOUTH. SOUTH DEVON AND EAST CORNWALL** HOSPITAL, Greenbank-road, PLYMOUTH. HOUSE PHYSICIANS, pre-registration posts, vacancies 1st and 14th January, 1959.

Apply with names of 3 referees, also stating age, nationality, qualifications and experience, to the Group Secretary, 7, Nelson-gardens, Plymouth.

**PONTEFRACT GENERAL INFIRMARY. House Surgeon** required. This is an approved pre-registration post under Medical Act, 1950, but applications will be considered from fully registered practitioners. Hospital approved under F.R.C.S. regulations and provides excellent surgical experience. Married accommodation available.

Applications as soon as possible to the Secretary, Pontefract and Castleford Hospital Management Committee, Great Northern House, Salter-row, Pontefract, Yorkshire.

**POOLE GENERAL HOSPITAL, Poole, Dorset. Bournemouth** AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Locum MEDICAL REGISTRAR required at the above Hospital on 1st January, 1959.

Applications to the Hospital Secretary.

**PORTSMOUTH GROUP HOSPITAL MANAGEMENT** COMMITTEE.

**Saint Mary's Hospital** (surgery—120 surgical beds)

HOUSE OFFICER (pre-registration). Vacant 30th January, 1959.

**Royal Portsmouth Hospital** (medical—61 medical beds)

HOUSE OFFICER (pre-registration). Vacant 19th January, 1959.

SENIOR HOUSE OFFICER required in Orthopædic Department (104 orthopædic beds). Vacant now.

ORTHOPÆDIC HOUSE OFFICER (pre-registration). Vacant now.

**Queen Alexandra Hospital** (medical—78 medical beds)

HOUSE OFFICER (pre-registration). Vacant 1st January, 1959.

**Saint Mary's Hospital**

SENIOR HOUSE OFFICER (obstetrics and gynæcology) (82 obstetric and 50 gynæcological beds). Vacant now. Post recognised for M.R.C.O.G.

Applications, stating age, experience and qualifications, together with the names of 2 referees, should be forwarded as soon as possible to E. H. HURST, St. Mary's Hospital, Milton-road, Portsmouth.

**PORTSMOUTH GROUP HOSPITAL MANAGEMENT** COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of REGISTRAR in the Chest Services of the Group for duties at the Portsmouth Chest Clinic and tuberculosis beds at the Infectious Diseases Hospital and Saint Mary's Hospital, including experience with a major thoracic surgery unit. Vacant 20th January, 1959.

Application forms, obtainable from the Group Secretary, Saint Mary's Hospital, Portsmouth, returnable by 5th January, 1959. Candidates may visit the above Clinic and Hospitals by arrangement with the Group Secretary.

**READING. BATTLE HOSPITAL. (391 Beds.) Reading** AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for post of RESIDENT JUNIOR HOUSE SURGEON (pre- or post-registration) required in Accident and Orthopædic Department. F.R.C.S. recognised, also casualty duties. Post vacant 28th January, 1959.

Write, giving full details with copies of recent testimonials, to Secretary.

**REDHILL. EAST SURREY HOSPITAL, Shrewsbury-road,** REDHILL, SURREY. SENIOR HOUSE OFFICER (Male), resident, surgical. Post recognised for F.R.C.S. Vacant January, 1959.

Apply to Hospital Secretary.

**REDHILL. EAST SURREY HOSPITAL, Shrewsbury-road,** REDHILL, SURREY. Locum HOUSE PHYSICIAN required for 2 weeks from 27th December, 1958.

Apply to Hospital Secretary.

**RHYL, FLINTSHIRE. ROYAL ALEXANDRA HOS-**PITAL. Applications are invited for the post of RESIDENT HOUSE PHYSICIAN (pre-registration or otherwise). Successful applicant will work in a busy acute medical unit of 32 Beds under the direction of the Consultant Physician and Medical Registrar. Vacant 1st February, 1959.

Applications, stating age and experience, with copies of 2 testimonials, to be sent forthwith to the Group Secretary, Clwyd and Deeside Hospital Management Committee, Rhianfa, Russell-road, Rhyl.

**ROCHDALE AND DISTRICT HOSPITAL MANAGE-**MENT COMMITTEE. ROCHDALE INFIRMARY. RESIDENT SENIOR HOUSE OFFICER (surgery) required. This post is recognised for F.R.C.S. qualification and offers excellent experience.

Apply at once to the Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancs.

**ROCHDALE AND DISTRICT HOSPITAL MANAGE-**MENT COMMITTEE. BIRCH HILL HOSPITAL, ROCHDALE. HOUSE OFFICER (obstetrics and gynæcology), required immediately. Pre- or post-registration post of 6 months' duration. Recognised for D.Obst.R.C.O.G.

Apply to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale.

**ROCHDALE AND DISTRICT HOSPITAL MANAGE-**MENT COMMITTEE. HOUSE PHYSICIANS required at Birch Hill Hospital. 3 resident posts available in December/January.

Apply at once to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancs.

**ROMFORD, ESSEX. RUSH GREEN HOSPITAL. (301** Beds.) RESIDENT HOUSE PHYSICIAN (Male or Female) required from 23rd January, 1959. This Hospital provides for acute medical, surgical and infectious patients. The post, which is also open to pre-registration candidates, offers good opportunities for gaining experience in both fevers and general medicine.

Applications should be addressed immediately to the Medical Superintendent, stating names of 2 referees.

**ROMFORD, ESSEX. RUSH GREEN HOSPITAL. (301** Beds.) RESIDENT HOUSE OFFICER (general surgery), Male or Female, required from 6th January, 1959. Post is recognised for pre-registration purposes and for F.R.C.S.

Applications should be forwarded immediately to Medical Superintendent, stating also names of 2 referees.

**ROTHERHAM HOSPITAL, Doncaster Gate, Rotherham.** (161 Beds. Recognised for D.A. and F.F.A. R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (anæsthetics) required 2nd March. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 5th January, 1959, giving age, nationality, qualifications, present and previous appointments, with dates, naming 3 referees.

**SALFORD. HOPE HOSPITAL. Salford Hospital Man-**AGEMENT COMMITTEE. Applications are invited for 2 HOUSE SURGEON posts, pre- or post-registration, which become vacant on 26th January, 1959. Posts recognised for the F.R.C.S.

Applications, stating age, qualifications and experience, together with the names and addresses of 2 referees, should be forwarded to the Hospital Secretary immediately.

**SALISBURY GENERAL HOSPITAL. Applications are** invited for the appointment of RESIDENT HOUSE PHYSICIAN for a period of 6 months from 19th February, 1959. Post open to pre-registration candidates.

Apply, naming 2 referees, to Group Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury.

**SCOTLAND. SOUTH-EASTERN REGIONAL HOSPI-**TAL BOARD. REGISTRAR in the Regional Thoracic Surgery Unit based on the Eastern General Hospital, Edinburgh.

Apply, giving particulars of age, qualifications and previous experience, and the names of 2 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 3rd January, 1959.

**SEDGEFIELD GENERAL HOSPITAL, Sedgefield, Stock-**TON-ON-TEES, CO. DURHAM. (336 Beds.) SENIOR HOUSE OFFICER ANÆSTHETIST required. Married accommodation available, full consultant staff employed. Post is recognised in connection with examinations for Diploma in Anæsthesia, excellent facilities for study including a good medical library.

Detailed applications and names of 2 referees to the Group Secretary, North Tees-side Hospital Management Committee, at the above address as soon as possible.

**SHEFFIELD. WHARNCLIFFE HOSPITAL. (129 Beds.)** SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time SURGICAL REGISTRAR required, 1st March. Additional duties in orthopædics ; single accommodation available. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 5th January, 1959, giving age, nationality, qualifications, present and previous appointments, with dates, naming 3 referees.

**SHEFFIELD. CITY GENERAL HOSPITAL. (652 Beds.** Recognised for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (thoracic surgery) required immediately. Appointment for 1 year in first instance. The Hospital has a Regional Department of Cardiology. Thoracic Surgical Unit deals with tuberculous and non-tuberculous cases. Previous thoracic surgical experience desirable.

Apply to the Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 5th January, 1959, giving age, nationality, qualifications, present and previous appointments, with dates, naming 3 referees.

**SHEFFIELD, S. CITY GENERAL HOSPITAL. Applica-**tions are invited for the resident post of HOUSE PHYSICIAN (pædiatrics) (Intern or Senior House Officer). Vacant 15th January, 1959. Recognised for D.C.H.

Apply, giving full details of qualifications, past and present appointments, and the names of 2 persons for reference, to the Group Secretary, Sheffield No. 1 Hospital Management Committee, Lyndhurst, Nether Edge Hospital, Sheffield, 11.

**SHEFFIELD NO. 4 HOSPITAL MANAGEMENT COM-**MITTEE. SHEFFIELD REGIONAL HOSPITAL BOARD. Radiotherapy Services. Medical Men and Women desirous of taking up radiotherapy are invited to apply for the post of RESIDENT RADIOLOGICAL OFFICER at Sheffield. The appointment will have the status of a Senior House Officer on a salary of £819 10s. p.a. Approved courses for the D.M.R.T. (R.C.P. & S.) are held at the Sheffield National Centre for Radiotherapy and will be open to the successful candidate, facilities being given to attend these. Should the appointee hold a high medical qualification or be in possession of the D.M.R.T. or have passed Part I of the examination for the Diploma, his status will be that of Registrar.

Applications for further particulars should be addressed to the Secretary, Broom Cross, Tree Root Walk, Sheffield, 10.

**SHEFFIELD. UNITED SHEFFIELD HOSPITALS.** REGISTRAR or SENIOR HOUSE OFFICER required 20th January, for the Department of Neurosurgery, Royal Infirmary. Previous experience welcome but not essential. This post, which if desired could be held for 6 months only, offers experience in management of head injuries as well as a wide range of surgical neurology.

Application, with names of 3 referees, to Chief Administrative Officer, United Sheffield Hospitals, West-street, Sheffield, 1, by 10th January, 1959.

**SHOREHAM-BY-SEA, SUSSEX. SOUTHLANDS HOS-**PITAL. (411 Beds.) HOUSE SURGEON, post recognised by R.C.S. for Fellowship; entails duties in general surgery and orthopædics ; vacant 1st January.

Applications to Secretary, Southlands Hospital.

A. V. OAKTON, Group Secretary,
Worthing Group Hospital Management Committee.

**SHOREHAM-BY-SEA, SUSSEX. SOUTHLANDS HOS-**PITAL. (411 Beds.) Locum SURGICAL REGISTRAR for an indefinite period from 27th December, 1958.

Apply Hospital Secretary, Southlands Hospital, as soon as possible.

A. V. OAKTON, Group Secretary,
Worthing Group Hospital Management Committee.

**SHOREHAM-BY-SEA, SUSSEX. SOUTHLANDS HOS-**PITAL. (411 Beds.) HOUSE PHYSICIAN. Post vacant 1st January.

Applications to Hospital Secretary.

A. V. OAKTON, Group Secretary.
Worthing Group Hospital Management Committee.

**SHREWSBURY. ROYAL SALOP INFIRMARY AND** COPTHORNE HOSPITAL. (500 Beds.) RESIDENT ANÆSTHETIST (Senior House Officer). Post recognised for F.F.A. R.C.S. Registrar also employed. Vacant 24th January, 1959.

Applications and copy testimonials to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

**SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL.** HOUSE SURGEON, one of 2, required 20th January. Pre-registration post which is recognised for the F.R.C.S. In addition to general surgery, the post offers experience in a male accident ward, including neurosurgical, plastic, &c., cases.

Applications, with names of 2 referees, to Secretary, before 9th January.

**SOUTH WEST METROPOLITAN REGIONAL HOS-**PITAL BOARD. Psychiatric Registrars Training Scheme. Applications are invited for the appointment of REGISTRAR with effect from 1st January, 1959, for 8-month periods in succession at each of the Hospitals: Knowle, Fareham; St. James's, Portsmouth; and Coldeast, Sarisbury, near Southampton. These appointments afford wide experience in the treatment of all forms of mental and nervous disorder and in mental deficiency. In addition there are special opportunities for experience in the Department of Child Psychiatry (inpatients and outpatients), in electroencephalography and in neurology whilst at St. James's, and for experience in the observation ward at Moorgreen Hospital, Southampton, whilst at Knowle Hospital. Salary, &c., in accordance with agreed terms and conditions of service for hospital medical staff. For residence, the appropriate charges are made for full residential amenities. Candidates may visit the hospitals by appointment with the Physician-Superintendent.

Application forms may be obtained from the Group Secretary, Knowle Hospital, Fareham, Hants, to whom 5 copies should be sent within 2 weeks of the appearance of this advertisement.

**SOUTHAMPTON GENERAL HOSPITAL. (465 Beds.** Recognised for F.R.C.S.) RESIDENT HOUSE SURGEON required. Pre-registration candidate eligible.

Applications should be forwarded to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton, with copies of recent testimonials.

**SOUTHAMPTON GENERAL HOSPITAL. (465 Beds.)** RESIDENT HOUSE PHYSICIAN required mid-January. Pre-registration candidates eligible.

Applications, with copies of testimonials, to Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

**SOUTHAMPTON GENERAL HOSPITAL.** (465 Beds. Recognised for the Membership and Diploma Examinations of the R.C.O.G.) RESIDENT HOUSE SURGEON (pre-registration) to the Gynæcological and Obstetric Unit required mid-January.

Applications, with copies of recent testimonials, should be forwarded as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

**SOUTHAMPTON CHILDREN'S HOSPITAL.** (Recognised by Conjoint Board for D.C.H.). HOUSE OFFICER required. Total establishment of 3 Residents. Salary, &c., as nationally advocated.

Applications, with copies of testimonials, to Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

**SOUTHEND. GENERAL HOSPITAL.** (262 Beds.) HOUSE SURGEON (pre-registration) required. Post now vacant.

Applications, stating age, qualifications and previous experience, with copies of recent testimonials (1 testimonial sufficient from applicants for first appointment), should reach the Secretary as soon as possible.

**SOUTHEND-ON-SEA. GENERAL HOSPITAL.** Applications are invited for appointment as RESIDENT CASUALTY OFFICER (Senior House Officer grade), with inpatient and outpatient duties in the Orthopædic and Fracture Department. Post recognised for the F.R.C.S.

Applications, stating age, qualifications and experience, together with copies of recent testimonials, should be sent to the undersigned as soon as possible. J. C. FIELD, Secretary.

**SOUTHPORT GENERAL INFIRMARY.** (189 Beds. Recognised for pre-registration.)

HOUSE PHYSICIAN (general medicine).
HOUSE PHYSICIAN (general medicine and ophthalmology).
HOUSE SURGEON (general surgery).

Appointments vacant January, 1959. House Surgeon post recognised for F.R.C.S.

Apply, stating age, qualifications, nationality, experience, and post required, with 2 copy testimonials, to Group Secretary, Southport and District Hospital Management Committee, Promenade Hospital, Southport.

**STAFFORD. STAFFORDSHIRE GENERAL INFIRMARY.** (175 Beds—Recovery Unit 32 Beds.) HOUSE SURGEON. Pre-registration post. Vacant January. At end of service the successful applicant will be considered for pre-registration post of House Physician if he or she has not held such an appointment.

Applications to Group Secretary, Stafford Hospital Management Committee, 13, Foregate-street, Stafford.

**STAFFORD. STAFFORDSHIRE GENERAL INFIRMARY.** RESIDENT CASUALTY OFFICER required. Junior Hospital Medical Officer status.

Applications, with names for reference, to Group Secretary, Stafford Hospital Management Committee, 13, Foregate-street, Stafford.

**ST. ASAPH HOSPITAL, St. Asaph, Flintshire.** Appointment of HOUSE OFFICER. Duties divided between ophthalmology (16 Beds), E.N.T. (12 Beds), and oral surgery (4 Beds).

Applications, stating age, qualifications and experience, accompanied by 2 recent testimonials, to be sent forthwith to the Group Secretary, Clwyd and Deeside Hospital Management Committee, Rhianfa, Russell-road, Rhyl.

**STOCKPORT INFIRMARY.** (183 Beds.) Applications are invited for the pre-registration post of HOUSE SURGEON (recognised for the F.R.C.S.).

Applications, with full particulars, and copies of 2 testimonials, to the Group Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw Heath, Stockport.

**STOKE-ON-TRENT. CITY GENERAL HOSPITAL.** (815 Beds.) RESIDENT SENIOR HOUSE PHYSICIAN (paediatrics) required (Senior House Officer grade). Post vacant very shortly. Recognised for D.C.H.

Applications, with copy testimonials, to Hospital Secretary as soon as possible.

**STOKE-ON-TRENT. CITY GENERAL HOSPITAL.** (815 Beds.) HOUSE PHYSICIAN (paediatrics) required. Post vacant very shortly. Pre-registration. Hospital recognised for D.C.H.

Detailed applications, with copy testimonials, to Hospital Secretary.

**STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY.** HOUSE OFFICER (medicine and dermatology) required. Recognised pre-registration.

Applications, with copy testimonials, to the Secretary at the Royal Infirmary, as soon as possible.

**STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY.** HOUSE OFFICER (medicine and paediatrics) required. Recognised pre-registration.

Applications, with copy testimonials, to the Secretary at the Royal Infirmary as soon as possible.

**STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY.** SENIOR HOUSE OFFICER (anæsthetics) required. Post vacant shortly. Recognised for F.F.A. R.C.S. and D.A.

Applications, with copy testimonials, to the Secretary at the Royal Infirmary as soon as possible.

**SWINDON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE.** Applications invited for the consecutive posts of OBSTETRIC AND GYNÆCOLOGICAL HOUSE SURGEON. The successful candidate will spend 6 months as Obstetric House Surgeon at the Maternity Hospital, Swindon (recognised for the D.Obst.R.C.O.G.) subject to the satisfactory completion of 6 months' service as Gynæcological House Surgeon at St. Margaret's Hospital, Stratton St. Margaret, near Swindon.

Applications to Group Secretary, 7, Okus-road, Swindon, as soon as possible.

**SWINDON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE.** RESIDENT HOUSE SURGEON (pre-registration) required for General Surgical Unit of 80 Beds at Victoria Hospital, Swindon. Recognised for F.R.C.S. Married accommodation available.

Full details, giving names of 3 referees, to Secretary, 7, Okus-road, Swindon.

**SWINDON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE.** RESIDENT HOUSE PHYSICIAN (pre-registration) required for Acute Medical Unit of 64 Beds at St. Margaret's Hospital.

Full details, with names of 3 referees, to Secretary, 7, Okus-road, Swindon.

**SULLY HOSPITAL, Penarth, Glamorganshire. Regional THORACIC CENTRE** (324 Beds). SENIOR HOUSE OFFICERS (2, Surgical) required to begin as soon as convenient. Experience gained in investigation and treatment of all chest and heart conditions. Applicants primarily interested in general surgery considered.

Form of application from Group Secretary, 44, Cathedral-road, Cardiff.

**SUTTON AND CHEAM HOSPITAL, Cotswold-road, SUTTON, SURREY.** (146 Beds.) RESIDENT SENIOR HOUSE OFFICER (Casualty Officer). Post recognised for F.R.C.S. Vacant now.

Applications, stating age, qualifications and experience, with copies of recent testimonials and the names of 2 referees, to the Group Secretary, St. Helier Hospital, Carshalton, Surrey.

**TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL.** HOUSE SURGEON required for post vacant 7th February. Pre-registration post.

Applications, stating age, qualifications with dates, with copies of 2 testimonials, to Secretary.

**TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL.** HOUSE PHYSICIAN required for post vacant 12th February. Pre-registration post.

Applications, stating age, experience and qualifications, with dates, with copies of 2 testimonials, to Secretary.

**TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL.** Applications are invited for the post of HOUSE PHYSICIAN to the Special Unit for Research in Juvenile Rheumatism, vacant 18th January. Post offers scope for those interested in research, paediatrics, rheumatology, or cardiology.

Applications, stating age, qualifications and experience, with dates, with copies of 2 testimonials, to Secretary.

**TAUNTON AND SOMERSET HOSPITAL, Taunton, SOMERSET.** JUNIOR HOSPITAL MEDICAL OFFICER, Male or Female, required for full-time, resident casualty and orthopædic work.

Applications, stating age, nationality, qualifications and experience, to the Group Secretary, Taunton Hospital Management Committee, c/o Musgrove Park Hospital, Taunton.

**TAUNTON AND SOMERSET HOSPITAL, Taunton, SOMERSET.** HOUSE OFFICER (E.N.T.) required. Post vacant early January. Post-registration appointment, recognised for F.R.C.S. and D.L.O.

Applications, stating age, nationality and qualifications, together with the names of 2 referees, should be forwarded to the Group Secretary, Taunton Hospital Management Committee, c/o Musgrove Park Hospital, Taunton.

**TAUNTON AND SOMERSET HOSPITAL, Taunton, SOMERSET.** HOUSE OFFICER (general surgery) required. Pre-registration post. Recognised for F.R.C.S. Post vacant 14th January, 1959.

Applications, stating age, nationality and qualifications, together with the names of 2 referees, should be forwarded to the Group Secretary, Taunton Hospital Management Committee, c/o Musgrove Park Hospital, Taunton.

**TILBURY AND RIVERSIDE GENERAL HOSPITAL. ORSETT BRANCH, ORSETT, ESSEX.** Applications are invited for the post of RESIDENT ORTHOPÆDIC HOUSE SURGEON at the above Hospital. The post is recognised under the Medical Act for pre-registration purposes, and suitable candidates are invited to apply. There exists a new Casualty Reception Unit at this Hospital. The appointment, which becomes vacant immediately, is for 6 months in the first instance.

Applications, together with copies of recent testimonials, should be forwarded to the undersigned.

G. E. WHYTE, Group Secretary,
Tilbury and South East Essex
Hospital Management Committee.

Thurrock Hospital,
Grays, Essex.

**TORQUAY. TORBAY HOSPITAL.** (180 acute general beds.) HOUSE OFFICER (medicine). Male or Female, required from last week of November. Pre-registration appointment. General duties which will include some work in the E.N.T., the Ophthalmic, and Radiotherapy Departments.

Applications, stating qualifications, nationality, age, together with copy testimonials (quoting reference F.955/91), to the Group Secretary, Torquay District Hospital Management Committee, Torbay Hospital, Torquay, S. Devon.

**TUNBRIDGE WELLS. KENT AND SUSSEX HOSPITAL. TUNBRIDGE WELLS GROUP HOSPITAL MANAGEMENT COMMITTEE.** SENIOR HOUSE OFFICER (E.N.T.) or Locum, required. Male or Female. Vacant 5th January. Recognised for F.R.C.S. and D.L.O.

Applications, giving age, qualifications, experience, and names of 2 referees, to Group Secretary, Sherwood Park, Pembury-road, Tunbridge Wells.

**WAKEFIELD. PINDERFIELDS GENERAL HOSPITAL.** Regional Thoracic Centre. Applications invited for position of SENIOR HOUSE PHYSICIAN. Salary £819 10s. p.a. £150 p.a. charged for accommodation.

Address written applications, giving full personal particulars, details of experience, and 2 names and addresses for reference, to W. BOWRING, Group Secretary, Pinderfields General Hospital, Wakefield.

**WAKEFIELD. PINDERFIELDS GENERAL HOSPITAL.** Applications invited for position of SENIOR HOUSE OFFICER in the Neurological Department. Salary £819 10s. p.a. A charge of £150 p.a. is made for accommodation.

Address written applications, giving full personal particulars and details of experience, &c., together with 2 names and addresses for reference, to W. BOWRING, Group Secretary, Pinderfields General Hospital, Wakefield.

**WALSALL HOSPITAL MANAGEMENT COMMITTEE.** Applications are invited for the following appointments :—

**Manor Hospital** (340 Beds)
HOUSE PHYSICIANS (2).

**General (Sister Dora) Hospital** (181 Beds)
HOUSE PHYSICIANS (2).

The above Hospitals are acute general hospitals situated in a densely populated industrial area and give wide experience in all branches of medicine and surgery. Posts recognised for pre-registration. Duties mainly acute medical, with opportunities for additional experience in cardiology, chest diseases, diabetes, and dermatology.

Applications, together with names of 2 referees, to Group Secretary, Walsall General (Sister Dora) Hospital.

**WALSALL HOSPITAL MANAGEMENT COMMITTEE.** Applications are invited for the following appointments :—

**Manor Hospital** (340 Beds)
HOUSE SURGEONS (2).

**General (Sister Dora) Hospital** (181 Beds)
HOUSE SURGEONS (2).

The above Hospitals are acute general hospitals situated in a densely populated industrial area and give wide experience in all branches of medicine and surgery. Posts recognised for pre-registration. Hospitals recognised by R.C.S. Opportunities for experience in general surgery, orthopædics, gynæcology, and E.N.T. surgery.

Applications, together with names of 2 referees, to Group Secretary, Walsall General (Sister Dora) Hospital.

**WARRINGTON INFIRMARY. (172 Beds.) Applications** are invited for the post of RESIDENT ANÆSTHETIST (Male or Female) (graded as Senior House Officer). The post will be vacant early in January. The Hospital is recognised for the D.A. examination. Salary is £819 10s. p.a., less a deduction of £150 p.a. for residential emoluments.

Applications, stating qualifications and experience, should be sent to HENRY L. BOOT, Group Secretary, Warrington and District Hospital Management Committee, c/o General Hospital, Warrington, Lancs.

**WATFORD, HERTFORDSHIRE. PEACE MEMORIAL** HOSPITAL. (211 Beds.) Applications are invited for the post of HOUSE PHYSICIAN at the above Hospital. Pre-registration post vacant 14th January, 1959. Salary in accordance with the National Health Service scale.

Please send applications, with copies of 2 recent testimonials, to the Administrator.

**WEST BROMWICH AND DISTRICT HOSPITALS** MANAGEMENT COMMITTEE. Applications are invited for the following appointments. Pre-registration:—

**West Bromwich and District General Hospital** (144 Beds)
1 HOUSE SURGEON.

**Hallam Hospital** (430 Beds)
1 HOUSE PHYSICIAN.
1 HOUSE SURGEON.

These posts will be vacant 8th January, 1959.

Applications, with 3 recent testimonials, to Group Secretary, West Bromwich and District Hospital Management Committee, Edward-street, West Bromwich.

**WEST CUMBERLAND HOSPITAL MANAGEMENT** COMMITTEE. SENIOR HOUSE OFFICER in Anæsthetics required immediately for service in West Cumberland Group based on Workington Infirmary.

Applications, with dates and names of 2 referees, to Group Secretary, Workington Infirmary, Cumberland.

**WESTON-SUPER-MARE GENERAL HOSPITAL. (104** Beds.) Applications are invited from duly qualified medical practitioners for the pre-registration appointment of HOUSE PHYSICIAN. Single residential accommodation provided. Vacant January, 1959.

Applications, stating age, qualifications, together with names and addresses of 2 referees, should be addressed to the Group Secretary, Weston-super-Mare Hospital Management Committee.

**WIGAN. ROYAL ALBERT EDWARD INFIRMARY.** (198 acute general beds.) HOUSE SURGEON, pre-registration post.

Applications, with names of 2 referees, to Secretary, Wigan and Leigh Hospital Management Committee, Knowsley House, Wigan.

**WIGAN. ROYAL ALBERT EDWARD INFIRMARY.** (200 Beds.) SENIOR HOUSE OFFICER in Orthopædic Surgery.

Applications to Secretary, Royal Albert Edward Infirmary, Wigan.

**WIGAN. ROYAL ALBERT EDWARD INFIRMARY.** SENIOR HOUSE OFFICER for duty in the Pædiatric Department at Wigan Infirmary with neonatal work at Billinge Hospital. Post recognised for D.C.H. Previous pædiatric experience necessary.

Applications, with names of 2 referees, to the Secretary, Royal Albert Edward Infirmary, Wigan.

**WIGAN AND LEIGH HOSPITAL MANAGEMENT** COMMITTEE. LEIGH INFIRMARY, LEIGH. SENIOR HOUSE OFFICER required for Casualty Department, with gynæcological and surgical duties at Astley Hospital.

Apply Secretary, Knowsley House, Wigan.

**WINDSOR. KING EDWARD VII HOSPITAL. House** SURGEON in General Surgery required, Male or Female, for post vacant 2nd January. Recognised for F.R.C.S. Pre-registration post.

Applications, with copies of recent testimonials, stating age, nationality, qualifications, with dates, to Secretary.

**WINDSOR. KING EDWARD VII HOSPITAL. House** PHYSICIAN (pædiatrics) required, Male or Female, for post vacant 9th February. Pre-registration post. Hospital recognised for D.C.H. Successful candidate will be resident at the Old Windsor Unit of the Hospital.

Applications, with copies of 3 testimonials, stating age, nationality, qualifications with dates, and experience, to Secretary.

**WINCHESTER. ROYAL HAMPSHIRE COUNTY HOS-**PITAL. (324 Beds.) SENIOR HOUSE OFFICER, Pathological Department. Vacant immediately. Preferably resident. Duties will include training in the various branches of clinical pathology, especially hæmatology. Previous experience in clinical pathology desirable, but not essential.

Applications, with copies of 2 testimonials, to the Hospital Secretary.

**WORKINGTON INFIRMARY, Cumberland. (174 Beds,** pre-registration post, recognised F.R.C.S.(Ed.).) HOUSE SURGEON (first, second, or Senior House Officer post). Vacant now.

Detailed applications with dates, and names of 2 referees, to Group Secretary.

**WREXHAM. MAELOR GENERAL HOSPITAL. (591 Beds.)** Applications are invited for the post of PÆDIATRIC HOUSE PHYSICIAN at the above Hospital, to commence 1st February, 1959. The appointment is recognised for the D.C.H., and for pre-registration purposes.

Applications, stating age, nationality, qualifications and experience, together with copies of 2 recent testimonials, should be addressed to the Group Secretary, Wrexham, Powys and Mawddach Hospital Management Committee, Maelor General Hospital, Wrexham, Denbighshire.

**WREXHAM. MAELOR GENERAL HOSPITAL (591 Beds).** WAR MEMORIAL HOSPITAL, WREXHAM (230 Beds). Applications are invited for HOUSE PHYSICIAN posts at the above Hospitals, to commence 1st February, 1959. The appointments are recognised for pre-registration purposes.

Applications, stating age, nationality, qualifications and experience, together with copies of 2 recent testimonials, should be addressed to the Group Secretary, Wrexham, Powys and Mawddach Hospital Management Committee, Maelor General Hospital, Wrexham, Denbighshire.

**WREXHAM. MAELOR GENERAL HOSPITAL (591** Beds). WAR MEMORIAL HOSPITAL, WREXHAM (230 Beds). Applications are invited for HOUSE SURGEON posts at the above Hospitals, to commence duties on 1st February, 1959. The appointments are recognised for the Diploma of F.R.C.S. (England, Edinburgh, and Ireland) and are pre-registration posts.

Applications, stating age, nationality, qualifications and experience, with copies of 2 recent testimonials, to be sent to the Group Secretary, Wrexham, Powys and Mawddach Hospital Management Committee, Maelor General Hospital, Wrexham, as soon as possible.

**WREXHAM (near). TREVALYN MANOR MATERNITY** HOSPITAL, ROSSETT, near WREXHAM. (47 Beds.) Applications are invited for the post of HOUSE SURGEON at the above Hospital, to commence duties on 1st February, 1959. The Hospital is a Part II midwifery training school and deals with normal and abnormal midwifery. This Hospital will be transferred in March, 1959, to a new Maternity Unit at the Maelor General Hospital, Wrexham.

Applications, stating age, nationality, qualifications and experience, with copies of 2 recent testimonials, to be sent to the Group Secretary, Maelor General Hospital, Wrexham, as soon as possible.

**WREXHAM. WAR MEMORIAL HOSPITAL. (230 Beds.)** Applications are invited for the post of SENIOR HOUSE OFFICER in the Orthopædic Department of the above Hospital, commencing 1st February, 1959. The post is a residential one and affords particular facilities for postgraduate study. Successful applicant will be allowed to attend for 2 days a month at the Robert Jones and Agnes Hunt Orthopædic Hospital, Oswestry. The Hospital is recognised for the Diploma of F.R.C.S. (England, Edinburgh, and Ireland).

Applications, stating age, nationality, qualifications and experience, together with copies of 2 recent testimonials, to be addressed to the Group Secretary, Maelor General Hospital, Wrexham, as soon as possible.

**TASMANIA. LAUNCESTON GENERAL HOSPITAL.** LAUNCESTON. Applications are invited from qualified medical practitioners who are graduates of at least 2 years' standing for the undermentioned positions:—

REGISTRAR in Surgery.
REGISTRAR in Anæsthetics.

These appointments are primarily for Medical Officers studying for higher qualifications in these specialties.

Salary £A1531 10s. p.a. Registrars who obtain a higher degree will be paid £200 p.a. in addition to the above salary.

Duration of appointment 1 year. Consideration may be given to extending the appointment for a second year, provided service has been satisfactory during the first year.

Accommodation: Single accommodation will be provided free. Married accommodation will be at a nominal rental.

Assisted passages: Assisted passages will be made available to the successful applicant.

Launceston General Hospital is recognised as a training school for higher qualifications by the Royal College of Surgeons (England), the Royal Australasian College of Surgeons, the Royal College of Obstetricians and Gynæcologists (for gynæcology only), the Royal College of Physicians and Surgeons for Diploma in Anæsthetics, Faculty of Anæsthetists Royal College of Surgeons of England for the F.F.A. R.C.S., the University of Sydney for Diploma in Anæsthetics.

1 year of residency at the Launceston General Hospital is recognised as a pre-registration year by the General Medical Council of Great Britain.

Closing date for applications 31st January, 1959.

Further particulars may be obtained by writing to the General Superintendent. B. W. GRIFFITHS, Secretary.

**WOKING, SURREY. VICTORIA HOSPITAL. (72 Beds.)** SENIOR HOUSE OFFICER (post-registration appointment) required for medical, surgical and casualty duties.

Apply, with 2 testimonials, to Hospital Secretary.

**WOLVERHAMPTON. ROYAL HOSPITAL. Pre-registration** HOUSE OFFICER (general surgery). Post recognised for F.R.C.S. 2 vacancies in January.

Apply, with copies of 2 testimonials, to the Secretary.

**WORCESTER ROYAL INFIRMARY. House Surgeon** (pre-registration or otherwise) required for General Surgery post at this busy general hospital of 213 Beds. The appointment offers wide and varied experience and is recognised for the F.R.C.S. examinations.

Applications to Hospital Secretary.

## Public Appointments

**FACTORY DOCTORS. Factories Acts, 1937 and 1948.** The following appointment as Appointed Factory Doctor is vacant. Apply to Chief Inspector of Factories, 19, St. James's-square, London, S.W.1.

| *District* | *County* | *Latest date for receipt of applications* |
|---|---|---|
| BEAMINSTER .. | DORSET .. | 10TH JANUARY, 1959 |

**BRISTOL. CITY AND COUNTY OF BRISTOL. Department** OF PUBLIC HEALTH. Applications invited from registered medical practitioners (Male) preferably holding Diploma in Public Health, for post of ASSISTANT MEDICAL OFFICER for duties in School Health and Maternal and Child Welfare Services. Opportunities also for suitable candidate to gain experience in other branches of public health service such as port health, housing and mental health work. Good facilities for research work. The successful applicant must devote his whole time to these duties and not engage in private practice. Post superannuable. Medical examination. Salary: £1050–£50 (3)–£1200–£55 (5)–£1475.

Applications by 17th January, 1959, on forms from Medical Officer of Health, Central Health Clinic, G.P.O. Box No. 201, Tower Hill, Bristol, 2.

**DURHAM. COUNTY COUNCIL OF DURHAM. Applications** invited from registered medical practitioners (Men and Women) for appointment as SCHOOL MEDICAL OFFICER. Applicants must have 3 years' experience in practice of profession. Salary scale £1050–£50–£1200–£55–£1475 p.a.

Forms of application, returnable by 14th January, 1959, and further details from undersigned.

G. H. METCALFE, Director of Education.

Shire Hall, Durham, 15th December, 1958.

**MIDDLESEX COUNTY COUNCIL. Assistant Medical** OFFICER (Male or Female) initially in Area 9 (Brentford and Chiswick, Heston and Isleworth, Southall). Duties include supervision of health of mothers, young children and school children. Experience in these branches of public health work advantage. Salary £1050–£1475 p.a. Established, pensionable, subject to medical assessment and prescribed conditions.

Full particulars, and names of 2 referees, to Area Medical Officer, 92, Bath-road, Hounslow, by 17th January. (Quote Y.851 L.) Canvassing disqualifies.

**WARWICKSHIRE COUNTY COUNCIL**

ASSISTANT COUNTY MEDICAL OFFICERS OF HEALTH AND SCHOOL MEDICAL OFFICERS, combined with a bursary scheme for taking the Diploma in Public Health.

Applications invited from young medical practitioners desiring career in public health. At least 2 years' medical experience and an agreement to serve County Council for 4 years are required. In fourth year, paid leave granted for full academic year to attend London University to take D.P.H.; living, travelling and course expenses paid.

Salary (assuming 2 years' experience in medicine):—

First 3 years £1000 p.a. (increments contributing towards cost of D.P.H. course).

Fourth year £1000, plus expenses not exceeding £316.

Posts kept open for candidates who may, if satisfactory, return after course to service of County Council at a salary of £1310, rising to £1475 p.a.

An officer withdrawing from bursary scheme would receive full adjustment of salary.

Posts superannuable from date of appointment. Successful candidates will be required to produce satisfactory medical certificates. Car is essential, for which Whitley Council scale of allowances is payable. Car purchase loan scheme available. Consideration will be given to financial assistance towards removal expenses.

Forms of application, with further complete details of the bursary scheme and the appointments of Assistant County Medical Officer of Health, can be obtained from the County Medical Officer of Health, Shire Hall, Warwick. Closing date for applications is 17th January.

L. EDGAR STEPHENS, Clerk of the Council.

Shire Hall, Warwick. 10th December, 1958.

**DUBLIN, IRELAND. LOCAL APPOINTMENTS COMMISSION.** Vacancies for:—

1. RESIDENT MEDICAL SUPERINTENDENT. Ardee District Mental Hospital. Salary £1493–£1653 plus emoluments.

2. E.N.T. SPECIALIST (part-time) under the Waterford Board of Public Assistance. Salary £649, with permission to use certain beds for the treatment of his private patients, and fees for certain additional duties.

Application forms and particulars from the Secretary, 45, Upper O'Connell-street, Dublin. Latest time for receiving completed application forms 5 P.M. on 9th January, 1959.

**CORK. COUNTY OF CORK. ST. STEPHEN'S REGIONAL CHEST HOSPITAL, CORK.** (500 Beds: 100 Beds for surgery—thoracic, tuberculosis, non-tuberculosis, cardiac, &c.) Vacancies for:—

(*a*) Temporary Whole-time ASSISTANT THORACIC SURGEON. Salary £1288 10s. p.a., with a right to limited private practice.

(*b*) Temporary Part-time CARDIOLOGIST. Salary £900 p.a.

Application forms and particulars may be obtained from the County Manager, Courthouse, Cork, with whom completed applications should be lodged not later than 5 P.M. on Friday, 9th January, 1959.

**NOTTINGHAMSHIRE COUNTY COUNCIL. Hucknall** URBAN DISTRICT COUNCIL. Mixed appointment. Applications are invited from registered medical practitioners for the mixed whole-time appointment of ASSISTANT COUNTY MEDICAL OFFICER AND MEDICAL OFFICER OF HEALTH to the Hucknall Urban District. Applicants must have had at least 3 years' professional experience since qualifying, be experienced in the duties of Medical Officer of Health, School Medical Officer, and in the care of mothers and young children, and possess a Diploma in Public Health.

Salaries are in accordance with the recommendations of the Medical Whitley Council for Public Health Medical Officers holding mixed appointments, namely:—

(*a*) As Assistant County Medical Officer (32/44ths), £954 10s. 11d.–£43 15s.–£1173 5s. 11d. (On scale £1200–£55–£1475 plus loading in accordance with Spens formula.)

(*b*) As Medical Officer of Health (12/44ths) £501 16s. 4d.–£15–£561 16s. 4d. (On scale £1740–£55–£1960 plus 12/44ths of £100.)

Application forms and conditions of appointment are obtainable from my office, and applications should reach me by 10th January, 1959. Canvassing disqualifies.

A. R. DAVIS, Clerk of the County Council.

Shire Hall, Nottingham.

**FALKLAND ISLANDS. Ophthalmologist (single, or, if** married, unaccompanied) required for about 6 months to undertake general ophthalmic duties including survey of entire population of approximately 2400 people. Candidates must possess higher qualification in ophthalmology. National Health Service superannuation rights can be maintained. Salary £100 a month. Free passages.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting BCD. 117/50/06).

**PUBLIC SERVICE OF SOUTH AUSTRALIA. Hospitals** DEPARTMENT. MEDICAL OFFICERS for Mental Institutions. Salary range: £A1996–£A2216 p.a.

Qualifications: Applicants must be eligible for registration as medical practitioners under South Australian laws, and preferably but not necessarily have had experience in psychiatric medicine.

The positions will be non-residential and normally involve duty from 9 A.M. to 5 P.M. on Mondays to Fridays. If Saturday morning work is required, an afternoon off will be granted during the week. Free family passages. House on rental basis provided.

Applications to the Agent General for South Australia, South Australia House, Marble Arch, London, W.1.

## General Practice

*For an* **Executive Council Post** *(England and Wales) apply on form* E.C.16A *obtainable from the council. Mark envelope "Vacancy."*

**MANOR PARK, London, E.12. Applications invited for** a partnership practice VACANCY; old-established urban practice previously conducted by husband and wife in partnership. Combined list approximately 6000. Residence and surgeries (2) available for purchase on negotiation. Applications on Form E.C.16A (obtainable from address below) to be submitted not later than 10th January, 1959, to the Clerk, East Ham Executive Council, 345, High-street North, Manor Park, London, E.12.

**Progressive Jewish Group Practice, North London, now** building medical centre requires fourth partner.—Address, No. 453, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

**West Midland Town, Large All-private Practice. Capital** required for large house (surgery and 2 flats). Dispenser and caretaker remaining.—Address, No. 452, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

## Hospital Services: Non-Medical Appointments

**BISHOP'S STORTFORD, HERTFORDSHIRE. HERTS** AND ESSEX GENERAL HOSPITAL. (341 Beds.) SENIOR TECHNICIAN, Grade I. Mainly required for Biochemistry in Area Laboratory at the above Hospital. Present salary £620 p.a. rising to £760 p.a. in accordance with Whitley Council scales. Appointment to commence during February, 1959.

Applications to Hospital Secretary, together with names of 2 referees.

## Miscellaneous

**Trainee Assistant, either sex, required for Perthshire,** February, 1959. Salary £960 per year. Car provided for work and recreation.—Reply, Address, No. 454, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

**"Pregnancy Diagnosis by the Xenopus Method," 24-hour** service. Send specimens of urine and £2 2s. fee. Hæmatology, Biochemistry, Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (MUSeum 5386–7).

**Doctors requiring applications, theses copied: Write to** MANTON (WESTMINSTER) LTD., 153, Victoria-street, S.W.1 (VIC. 0141), who are specialists.

**For sale, Sanborn Viso Cardiette Model 572. £175.**—Address, No. 451, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.



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*when time is against you...*

**ACHROMYCIN**★

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★REGD. TRADEMARK

**INTRAMUSCULAR**

***goes right to the site of infection***

Rapid diffusion in body tissues and fluids means immediate control of infection.

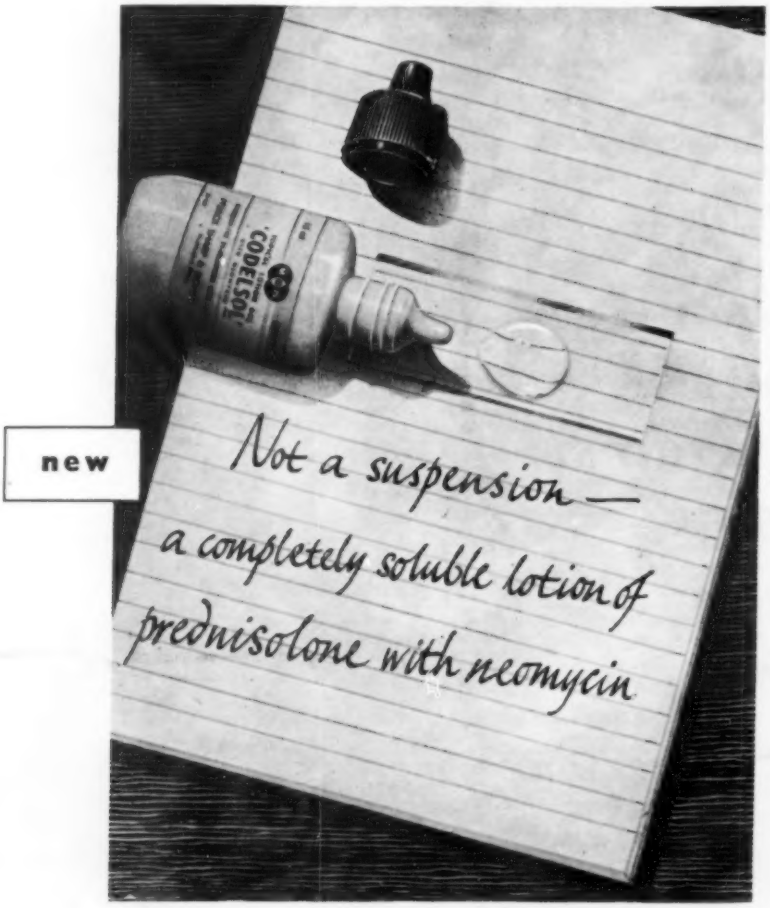
*Supplied in vials of 100 mg.*

Lederle

LEDERLE LABORATORIES DIVISION

Cyanamid OF GREAT BRITAIN LTD., London, W.C.2

CYANAMID




# CODELSOL

Trade Mark

## SKIN LOTION WITH NEOMYCIN

(Prednisolone 21-phosphate with Neomycin)

**'Codelsol' Skin Lotion** contains the highly potent steroid, prednisolone, in its most active form together with the clinically reliable antibiotic, neomycin.

**'Codelsol' Skin Lotion** rapidly and effectively suppresses inflammation and controls infection in a wide variety of skin conditions.

**'Codelsol' Skin Lotion** is free from solid particles so that maximum penetration is assured.

**'Codelsol' Skin Lotion** possesses unique spreading properties, even on hairy surfaces.

**'Codelsol' Skin Lotion** is most acceptable to the patient since it does not stain, smell or show.

**How supplied:** 'Codelsol' Skin Lotion with Neomycin is available in 15 ml. plastic squeeze bottles. Please specify SKIN LOTION when prescribing.

*The basic N.H.S. cost is 16/- per 15 ml. bottle.* *Literature gladly supplied on request.*

**Prednisolone 21-phosphate is 2,000 times more soluble than hydrocortisone**

*Made in England by*

**MERCK SHARP & DOHME LIMITED, HODDESDON, HERTS.** MSD